Journal

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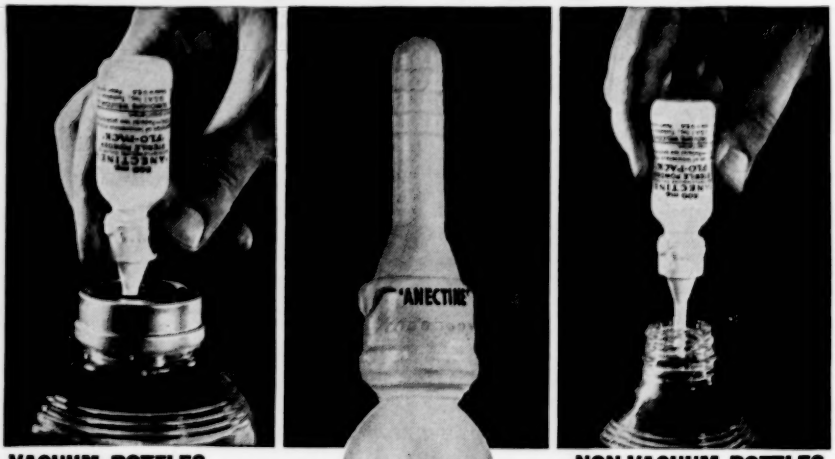

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Twenty-Seventh Annual Convention American Association of Nurse Anesthetists

August 28-September 1, 1960
San Francisco, California
Hotel Headquarters — Sheraton-Palace

PROGRAM

Sunday, August 28

8:00 A.M.-5:00 P.M. **Registration**
A.A.N.A. Registration — Comstock Room and California Room, 2nd floor
Sheraton-Palace Hotel

9:00 A.M.-9:00 P.M. **Registration**
A.H.A. Registration — A.H.A. Headquarters
Jack Tar Hotel

8:00 A.M. **Assembly of Directors of Schools of Anesthesia***
Comstock Room, Sheraton-Palace Hotel
Clarene A. Carmichael, C.R.N.A., B.S.
Educational Director, A.A.N.A.
Presiding Officer

Greetings
Olive L. Berger, C.R.N.A.
President, A.A.N.A.

8:00 A.M.-12:00 Noon **Round Table Discussions**
Cameron W. Meredith, Ph.D.
Educational Advisor, A.A.N.A.
and
Clarene A. Carmichael, C.R.N.A., B.S.
Educational Director, A.A.N.A.
Discussion Consultants

2:00 P.M.-4:00 P.M. **Panel Discussion**
Comstock Room, Sheraton-Palace Hotel

4:00 P.M.-5:00 P.M. **Question Box and Distribution of New Material**

DISPLAY OF SCHOOL EXHIBITS
Comstock Room, Sheraton-Palace Hotel

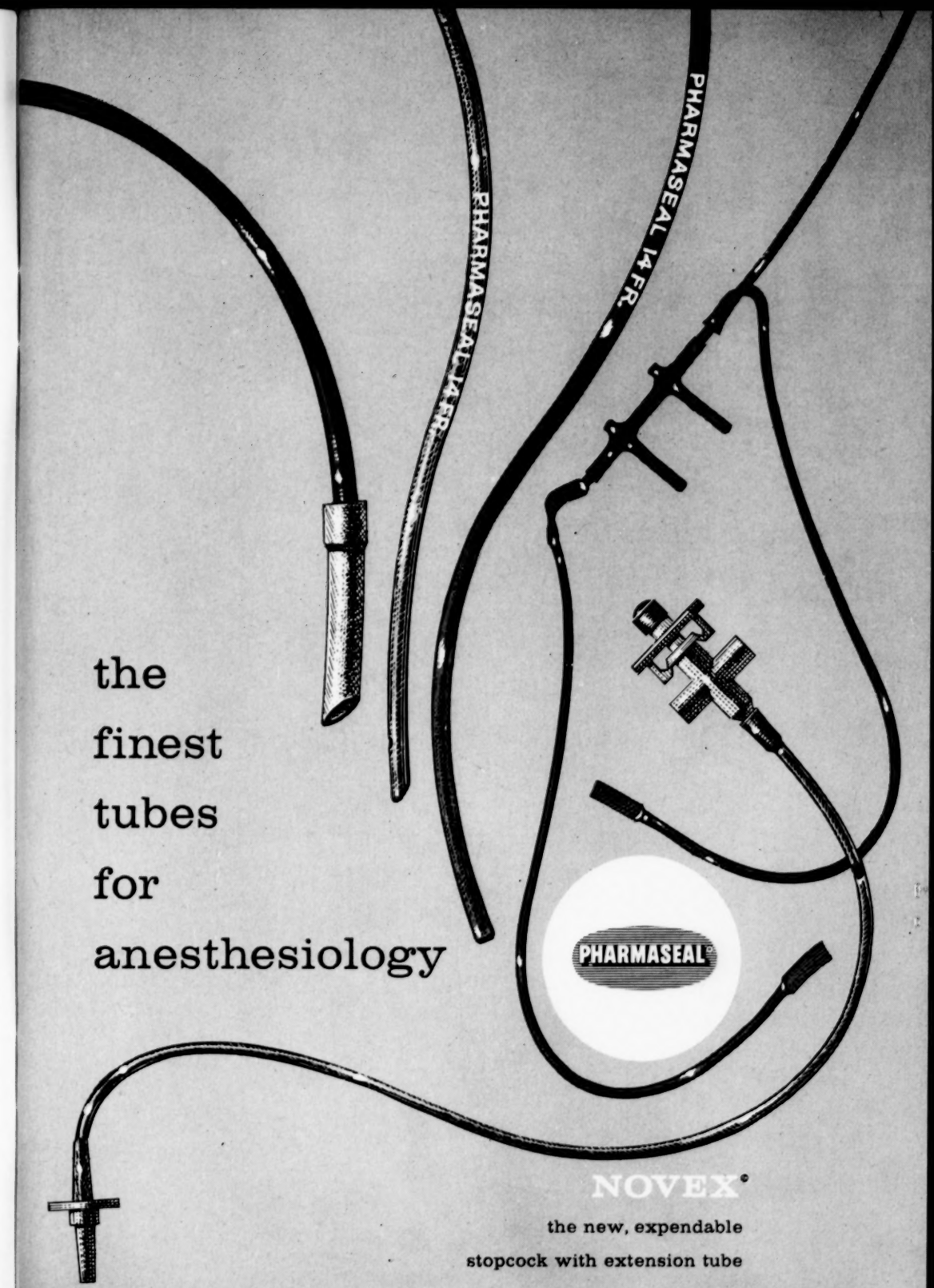
COUNCIL SESSION**
(See also Assembly Program)

9:00 A.M.-12:00 Noon **Workshop for Program Planners**
California Room, Sheraton-Palace Hotel
Florence A. McQuillen, C.R.N.A.
Presiding Officer

2:00 P.M.-5:00 P.M. **Problems of State and National Associations**

*Although this program is of specific interest to Directors of Schools of Anesthesia, ALL members are invited to attend these sessions.

**Although this program is of specific interest to national and state officers, ALL members are invited to attend these sessions.



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Monday, August 29

8:00 A.M.-5:00 P.M. **Registration**
A.H.A. Registration, Civic Auditorium
A.A.N.A. Registration — A.A.N.A. Booth E-10
Civic Auditorium

9:00 A.M. **Official Opening**
General Session
Larkin Hall, Civic Auditorium
Olive L. Berger, C.R.N.A.
President, A.A.N.A.
Presiding Officer

Invocation
Josephine Bunch, C.R.N.A.
Past President, A.A.N.A.

Address of Welcome from A.H.A.

Address of Welcome
Olive L. Berger, C.R.N.A.
President, A.A.N.A.

9:15 A.M. Clara McCoig, C.R.N.A.
Past-president, Nevada Association of Nurse Anesthetists
Presiding Officer

Anesthesia for Heart Surgery
Kenneth K. Keown, M.D.
Professor of Anesthesiology
Missouri University School of Medicine
Columbia, Missouri

10:15 A.M. **Anesthesia for Thoracic Surgery**
E. George Beer, M.D.
Chief, Anesthesiology Section
V.A. Hospital, Oakland, California

11:00 A.M. **Maxillofacial Surgery and Hypnosis in the Operating Room**
Dan N. Steffanoff, M.D., D.M.D.
Portland, Oregon

2:00 P.M. **General Session**
Larkin Hall, Civic Auditorium

Presiding Officer

Pediatric Anesthesia
M. Digby Leigh, M.D.
Director, Division of Anesthesia
Children's Hospital
Los Angeles, California

3:00 P.M. **Use of Heart Lung Machine in Cardiac Surgery**
Mary A. Costello, C.R.N.A.
Director, School of Anesthesia
Cincinnati General Hospital
Cincinnati, Ohio

7:00 P.M. **State Night Dinner**
Rose-Concert Room, Sheraton-Palace Hotel
Vera Scott, C.R.N.A.
Chairman, Convention Committee and President, California Association of Nurse Anesthetists
Presiding Officer

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Tuesday, August 30

9:00 A.M. **Business Session**
Larkin Hall, Civic Auditorium
Olive L. Berger, C.R.N.A.
President, A.A.N.A.
Presiding Officer

Call to Order
Appointment of Tellers
Roll Call
Report of Approval of Minutes Committee
Reports of Officers
Reports of Standing Committees

11:00 A.M.-1:00 P.M. **Election of Officers**

2:00 P.M. **Business Session**
Larkin Hall, Civic Auditorium
Olive L. Berger, C.R.N.A.
President, A.A.N.A.
Presiding Officer

Reports of Standing Committees
Reports of Special Committees
Unfinished Business
New Business

Wednesday, August 31

General Session
9:45 A.M. Larkin Hall, Civic Auditorium

Presiding Officer

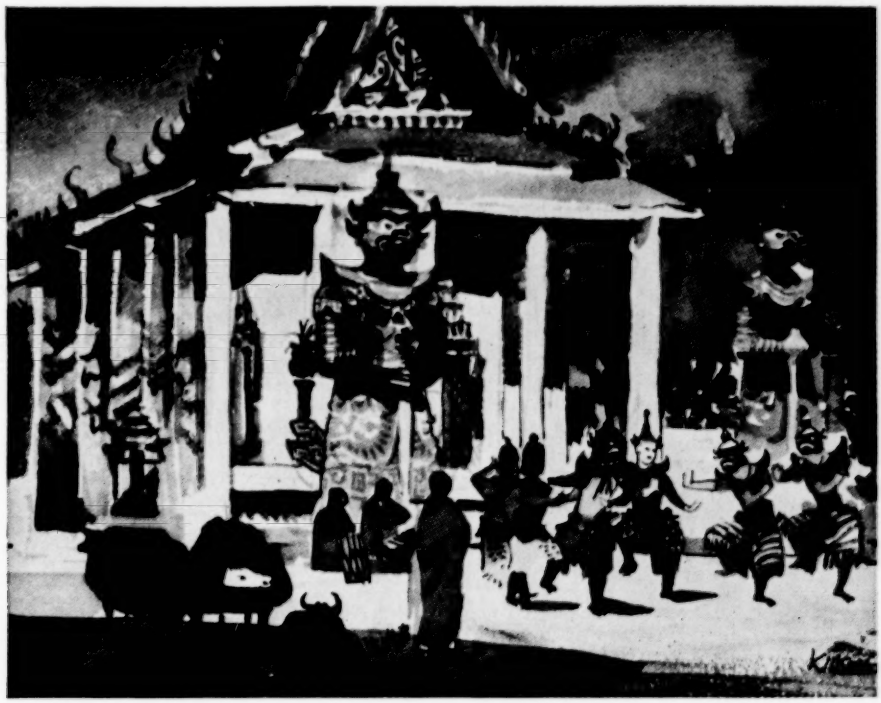
An Approach to the Evaluation of New Drugs
Carl W. Fisher, M.D.
Chief Anesthetist
East Bay Kaiser Foundation Hospitals
Walnut Creek, California

10:45 A.M. **Fluothane and Common Sense**
Richard J. Ward
Major, USAF, MC
Chief, Surgical Research Laboratory
USAF Hospital, Lackland AFB, Texas

2:00 P.M. **General Session**
Larkin Hall, Civic Auditorium
Clesta Steffe, C.R.N.A.
Vice-president, California Association of Nurse Anesthetists
Presiding Officer

Anesthesia Management of Accident Cases
E. Trier Morch, M.D.
Anesthesiologist
Chicago, Illinois

3:00 P.M. **Chemistry Made Easy**
John Adriani, M.D.
Director, Department of Anesthesia
Charity Hospital
New Orleans, Louisiana



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Wednesday, August 31

7:00 P.M. **Banquet**
Rose-Concert Room, Sheraton-Palace Hotel
Olive L. Berger, C.R.N.A.
President, A.A.N.A.
Presiding Officer

Thursday, September 1

9:00 A.M. **General Session**
Larkin Hall, Civic Auditorium
Dorothy Battles, C.R.N.A.
President, Idaho Association of Nurse Anesthetists
Presiding Officer

Understanding Ourselves
Raymond N. Lowe, Ed.D.
University of Oregon
Eugene, Oregon

10:00 A.M. **Toward Self-fulfillment**
Cameron W. Meredith, Ph.D.
Educational Advisor, A.A.N.A.

11:00 A.M. **The Law and the C.R.N.A.**
Emanuel Hayt, LLB
Counsel A.A.N.A.
New York, New York

12:00 Noon **Unfinished Business and Adjournment**

Call to the Convention

As provided for in the Bylaws of this Association, and at the direction of Miss Olive L. Berger, President, we hereby issue this official call to the members for the annual meeting to be held in San Francisco, August 29 - September 1, 1960. The annual business session will be held on Tuesday, August 30, in the San Francisco Civic Auditorium.

Accomplished at the Executive Offices, Prudential Plaza, Chicago 1, Illinois, this first day of July, 1960.

Florence A. McQuillen

Executive Director

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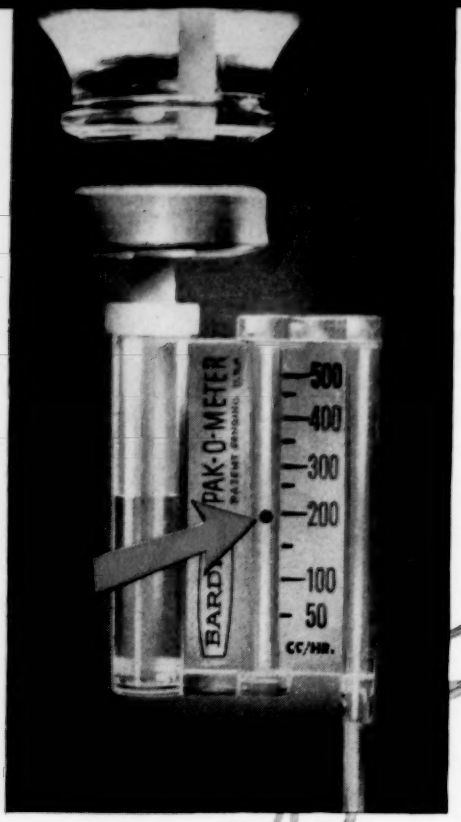

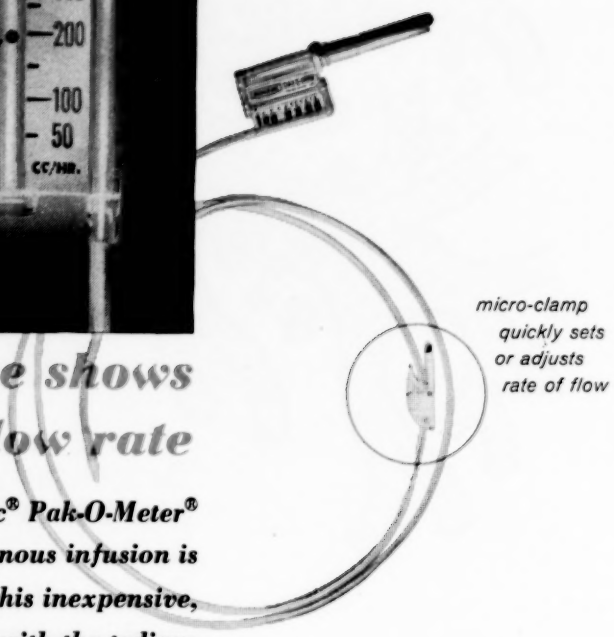

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The Mechanism and Effects of Problems due to Carbon Dioxide during Anesthesia

Robert L. Knox, M.D.*
Memphis, Tennessee

The fact that complications may arise during anesthesia as a result of carbon dioxide has been known for many years. As more is known about the effects of carbon dioxide during anesthesia it is realized that many complications which were previously unexplainable are due directly or indirectly to carbon dioxide. The purpose of this paper is to present some of the new thoughts upon this subject and to bring other and older thoughts up to date.

Physiological Mechanisms of Carbon Dioxide in the Body

Carbon dioxide is a waste product of the body which has been measured in both conscious and anesthetized patients and found to vary from 185 to 425 cc. per minute.[1] The control of the carbon dioxide concentration is a complicated business in the healthy individual and becomes even more complex during anesthesia.

The retention of carbon dioxide in the blood plus a decrease in pH below 7.35 - 7.45 is called respiratory acidosis. The pH of the blood is maintained within normal limits chiefly by the buffer system in the plasma, mainly carbonic acid and sodium bicarbonate, and by the excretion of carbon dioxide in the lungs. Thus, the body can quickly respond to changes in pH by the elimination of carbon dioxide into alveolar air. Any process that interferes with, or alters respiration, will interfere with the elimination of carbon dioxide and possibly lead to respiratory acidosis.[2]

Carbon dioxide is of importance in the control of both circulation and respiration and its tension is normally maintained within very narrow limits.

The individual response to inhalation of carbon dioxide shows marked variations and these variations are most pronounced when high concentrations are inhaled. Low concentrations are manifested chiefly upon the medullary center with higher concentrations acting also upon the chemoreceptors. Even higher concentrations have a narcotic action with depression of the respiratory center.

Carbon dioxide is rapidly eliminated from the body following inhalations of high concentrations for 2 to 10 minutes but rapid elimination usually does not occur if the blood carbon dioxide has been elevated for hours rather than a few minutes.[3]

---

* Associate Anesthesiologist, Methodist Hospital, Memphis.

Presented at the annual meeting, Mid-South Assembly of Nurse Anesthetists, Memphis, February 12, 1960.

SPECIFIC EFFECTS UPON THE BODY

1. The respiratory center and respiration. Low concentrations of carbon dioxide increase the depth of respiration only, but higher concentrations increase both the rate and depth. As little as 2% carbon dioxide in the inspired air will stimulate respiration, and this is despite the fact that the alveolar air normally contains 5.2%. The breathing of low concentrations of carbon dioxide in the inspired air interferes with its excretion. The result is a rise in the partial pressure of carbon dioxide in the alveoli air plus an increase in the concentration of carbonic acid in the arterial blood.[4]

2. Circulation. Direct stimulation of the cardiovascular medullary center results in increased cardiac rate and force of contraction. The vascular beds innervated by the sympathetic nerves are constricted, resulting in increased peripheral resistance. Carbon dioxide also has a local action upon blood vessels, resulting in dilation with oozing at the operative site. Generally, the cardiovascular center effects predominate, with the systolic pressure increasing more than the diastolic.[4] An increase in carbon dioxide tension in venous blood returning to the heart enhances the extensibility of the cardiac muscles during diastole and therefore increases the cardiac output. With continued increase in carbon dioxide, a depressant effect on the heart occurs, resulting in a decrease in blood pressure and possible shock.

3. Heart. The conduction tissues are particularly sensitive to increased carbon dioxide tension as the A-V conduction is markedly depressed by a reduction in the blood pH. Complete heart block occurs at about a pH of 7. A less pronounced increase in carbon dioxide tension causes slowing of the heart due to a reduction in activity of the S-A node as well as an increase in tone of the cardioinhibitory center. The continued exposure of the heart to high carbon dioxide tension results in a weakening of the cardiac muscles plus the development of irregular rhythm. These arrhythmias consist chiefly of ventricular extrasystoles, bigeminal rhythm and ventricular tachycardia with possible cardiac arrest. The reduction of alveolar carbon dioxide tension towards normal results in disappearance of these arrhythmias.[5]

A decrease in pH produces an escape of potassium from the cells of the body but the cardiac cells tend to accumulate potassium. This results in increased sensitivity of the heart to vagal stimulation. Fatal cardiac reflexes may result due to tracheal suction, hilar manipulation or extubation.[6]

4. Liver. No account of studies made in man could be found. One study performed upon dogs[7] showed that under anesthesia with no hypoxia present, moderate increase in blood levels of carbon dioxide impaired liver function as measured by PSP test.

5. Adrenal. Increases in carbon dioxide concentrations cause an increase in adrenal secretions which appear to be directly related to the concentration of carbon dioxide inhaled.[8]

6. Postoperative effects. As stated previously, low concentrations of carbon dioxide have a stimulating effect upon respiration, but with an increase in concentration, particularly over a period of several hours, a narcotic effect occurs. By the end of the operation the center may be so dam-

aged that it will not respond to normal respiratory stimulation. Several hours may elapse before the center will again be able to take over.[9]

Cyclopropane shock is a name which has been applied to a condition found in postoperative patients who exhibit the picture of hypotension, they appear pale and listless, and may show shallow respirations and even unconsciousness. The pulse is usually increased but within normal range but sometime may be greatly elevated in rate. Ventricular fibrillation may also result if a rapid fall in carbon dioxide due to hyperventilation occurs. Cyclopropane shock is a misnomer, as this condition is due to hypercarbia instead of cyclopropane.

Patients whose carbon dioxide tensions are maintained near normal levels recover from anesthesia much more quickly than patients with elevated carbon dioxide tensions.[3]

7. Cerebral circulation. Marked increase in cerebral blood flows results from accumulation of carbon dioxide in the blood. Changes are brought about which are independent of alterations in the general blood pressure, and the cerebral flow may be increased by 40 per cent. This increased blood flow results in a swelling of the brain and increased intracranial tensions.[5]

Explanation of Mechanisms of Hypercarbia

The mechanisms of hypercarbia under anesthesia are many but the three main groups will be considered here: 1. Local effects in the lung due to disease or hypoventilation. Abnormal position upon the table also falls into this category; 2. Central and local effects of anesthetic drugs and muscle relaxants; and, 3. Mechanical causes due to incomplete absorption of carbon dioxide, improperly functioning nonrebreathing valves, and external dead space.

1. Local effects in the lungs. Hypoventilation is the basic mechanism for the accumulation of carbon dioxide and thus will be covered in more detail.

Normal ventilation results from the mechanical mixing of inspired air with the air already present in the lung and then by the slower process of diffusion into the blood stream. During expiration the air which has been in the distended alveoli overflows into the bronchioles and bronchi. At the next inspiration, this air is swept back into the air sacs and its place is taken by fresh air. This latter air, as compared with the alveolar air, has increased oxygen tension and a lowered carbon dioxide tension. Oxygen then diffuses from the inspired air to the alveolar air and carbon dioxide diffuses in a reverse manner.

The anatomical dead space consists of the passage from the nostrils to and including the terminal bronchioles. The capacity of the dead space is approximately 150 cc. During ordinary inspiration (500 cc.) a portion is used to fill the dead space and the air in the previous dead space is drawn into the alveoli together with the remaining 350 cc. of inspired air. This 350 cc. is added to a large volume of air (2000 cc.) which remains in the lung after the previous expiration.[2]

The primary objective of respiration is to supply oxygen for metabolism and to eliminate carbon dioxide. To maintain a good physiological balance it is necessary to provide adequate and even alveolar ventilation, proper diffusion of gases across the alveolar membrane, and a pulmo-

nary capillary blood flow which balances the alveolar ventilation. These three things are necessary and, unless all are provided, hypoventilation may result. When a patient is hypoventilated the tidal volume may be only sufficient to fill the dead space and not enough to ventilate the alveoli at all. Only air or gases which reach the alveoli are of importance in the process of ventilation.

Unequal enlargement of the thoracic cage results in unequal expansion of the lungs with the result that blood and air do not properly mix. Along with this diseases in the lungs, such as in emphysema, do not allow for adequate mixing. The result is the retention of carbon dioxide as part of the blood is circulated through unventilated portions of the lungs. A given minute volume of artificial respiration is not so effective in removing carbon dioxide as the same volume of spontaneous ventilation. However, spontaneous ventilation under anesthesia is depressed and will lead to respiratory acidosis unless artificial hyper-ventilation is provided. The hyper-ventilation is necessary to counteract changes that occur in the lungs. These changes result from changes in the viscous and elastic resistances which govern entry of air into the various parts of the lungs with a resulting abnormal distribution of the air.[1] The functioning dead space also may vary during artificial respiration because of changes in the caliber of the bronchial tree. Trapping of air may result due to bronchi being closed by pressure. An additional factor in artificial ventilation is the change in the systemic circulation, particularly of the venous side, which vary the rate at which carbon dioxide is brought to the lung for excretion.

The possibility of retained carbon dioxide is greater with the closed system but will occur with semiclosed respiration. Controlled or assisted respirations are vital to many surgical procedures, as in no other way could normal circulatory or respiratory physiology be maintained. The proper method of controlled respiration is to maintain a rate of approximately 12 to 16 times per minute with a relatively slow and even inspiration carried to the point of full chest expansion. At the height of inspiration the pressure in the lung is held tightly for a second and then suddenly released. There should be complete release of the bag between compression. This release makes for easier expiration and greater exchange of air. The expiratory phase should be at least twice as long as the inspiratory phase, to allow for complete emptying of the lungs. Good relaxation is easier to obtain with good ventilation.[10]

2. Central and local effect of anesthetic drugs. Practically all anesthetic agents depress the respiratory center making it less sensitive to the effects of carbon dioxide. This also includes ether although in light anesthesia, ether may produce an increase in minute volume but in deeper planes there is a definite respiratory depressive effect.[11]

Accumulation of carbon dioxide likewise occurs from the depressant effect of preoperative drugs, and the blood carbon dioxide level may be increased even before anesthesia commences.

Muscle relaxant drugs, due to their local blocking of the myoneural junction, cause hypoventilation due to blocking of respiratory muscles.

3. Mechanical. In anesthesia any increase in airway resistance, such as caused by an obstructed airway or

narrow endotracheal tube, impairs expiration by an increase in resistance with an increase in alveolar carbon dioxide.

An increase in respiratory dead space, either within the body or in anesthetic equipment, is one of the commonest reasons for hypercarbia. One study has shown that with an added dead space of 40 cc., both the tidal volume and carbon dioxide tension increased but in general the tidal volume increased less than the amount of added dead space. The smallest increase in external dead space is of significance even in normal subjects as they are able to compensate only partially. In the presence of disease this increase assumes even greater importance.[12] The mask or any other attachment from the patient to the Y-piece will add an area of external dead space to the already anatomical dead space. Another source of dead space is the improper filling of soda lime canisters with dead space left in the top.

Non-rebreathing valves are used to provide oneway flow of gases. A defect allows reflux of gases with an opportunity for rebreathing to occur and thus the accumulation of carbon dioxide.

Present Status of Carbon Dioxide Absorption

The absorption of carbon dioxide in anesthesia was at one time thought to be more efficient with an 8 by 13 cm. cylindrical canister, as the dead space in the canister approximately equaled the patient's tidal volume. Absorption was considered inadequate if the tidal volume was greater than the dead space in the canister but absorption would continue to be effective if the air space in the canister was greater than the tidal volume.[1]

Carbon dioxide is not completely removed even at the onset when a fresh charge of absorbent is placed in use. The quantity filtering through is minute and cannot be determined by ordinary means of detection. A considerable period of time exists between the onset of incomplete carbon dioxide absorption and the appearance of indicator change in the surface granules in the canister.[13] The absorbent is still active and continues to remove carbon dioxide for some time after it is first detected. This unabsorbed portion is recirculated and remains nearly constant for several hours. The amount of carbon dioxide increases until the point is reached where much of the absorbing surface has been converted to carbonate and no longer effectively absorbs carbon dioxide. The amount of carbon dioxide rebreathed rises sharply and symptoms of carbon dioxide excess develop. Patients vary as to when they will exhibit signs of hypercarbia as some can tolerate greater tensions than others.

Adriani[1] states that the removal of carbon dioxide is best accomplished today by the use of a large capacity circle filter and this is preferred to the to and fro canister as there is a progressive extension of dead space as anesthesia progresses due to exhaustion of absorbent at the inlet.

The circle absorbers of choice today consist of two interchangeable canisters used in series. The gases are conducted through the upper section until the indicator changes color. The lower half still has active life even though partly exhausted and does not completely remove carbon dioxide at the time of color change in the upper chamber. The lower chamber is then shifted to the upper position. The ex-

hausted half is replenished with fresh absorbent and placed in the lower position.[1]

Treatment

Ventilation at all times should be even with equal expansion of the lungs bilaterally. The chest should be watched if possible to determine if it expands with each respiration. By following this rule, trapping of air and hypoventilation of certain areas of the lung will be prevented or greatly reduced.

If marked respiratory acidosis has occurred, then it must be treated. The method of treatment will depend upon the patient's condition. Mild respiratory acidosis in which post-operative shock is present is best treated with vasopressors and this is usually all that is needed. In marked respiratory acidosis in which carbon dioxide has exerted a narcotic action on the respiratory center, the respiration must be assisted as it is very likely that the patient will be apneic or at best hypoventilating. The tidal volume should be approximately 650-700 cc. to hasten carbon dioxide elimination. The elimination should not be precipitous as cardiac arrhythmias and shock may ensue. The assisted ventilation occurs until the patient is ventilating adequately and has regained consciousness.[14]

Hypocarbia

For completeness, the opposite side of acidosis — respiratory alkalosis — must be considered. Respiratory alkalosis results from hyper-ventilation. The harmful effects of hypocarbia, at least as to whether they occur in any degree of severity during anesthesia, are debatable, and many feel it is better to afford the possible risk of hyper-ventilation than to risk the toxic accumulation of carbon dioxide.

Toxic effects: 1. Vasoconstriction of the cerebral and coronary vascular beds; 2. Skin is cold, moist and pale due to peripheral arteriolar constriction; 3. Shift of oxygen dissociation to the left with decrease in release of oxygen to the tissues, and, 4. Changes in EKG possibly due to impaired delivery of oxygen.

As stated before many believe these to be theoretical hazards of hyperventilation and doubt that any clinically significant ill-effects are produced by the degree of acute overbreathing.

In the event of postoperative apnea due to hypocarbia it is best to treat as follows: 1. Fill lung with 100 per cent oxygen and allow apnea to persist until arterial carbon dioxide tension rises sufficiently to initiate respiration. 2. If apnea is not relieved within 90 to 120 seconds, ventilate again. Apnea may persist for several minutes.[15]

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(Continued on page 255)

The Use of Hypnosis in Anesthesia

Bernard K. Galston, M.D.*
Chicago, Illinois

Introduction

The use of hypnosis in conjunction with anesthesia merits special consideration if it meets only two basic prerequisites: 1. To relieve fear, anxiety, tension, hostility and pain. 2. To increase the safety of the patient by reducing the amount of needed anesthesia, and improving the postanesthetic course of the patient.

Elimination of fear and apprehension is often most difficult owing to the deep roots in the unconscious of such fear and anxiety. It is hard to convince a patient that he will not have pain, when all his life's experiences tell him otherwise. Freud has called attention to the fact that one of the two strongest of all human drives is avoidance of pain; the other being the pursuit of pleasure. The patient's desire to avoid pain provides the strongest motivation to accept both hypnosis and the analgesia, which he is informed, can be produced under hypnosis. He is not ordinarily susceptible; his need for escape from pain makes him eager to accept any suggestion which will enable him to avoid it. Therefore, he is far more likely to enter a trance than is the average person under other circumstances, and also to produce analgesia when it is suggested.

Since these factors are present upon the patient's admission to the hospital, it would seem justifiable to us, as anesthetists, to use them for the best possible benefits. Certainly we are all convinced that the anesthetic should not commence with the insertion of the needle into a vein, or the frightening maneuver of placing a rubber mask over the face. The proper conditioning of the patient must begin before he goes to the operating room. The use of hypnotic suggestions can help make this overwhelming and traumatic experience so much more pleasurable. Call it "Hypnosis" or whatever term you choose, but let us allow ourselves the privilege of using this patient-anesthetist rapport to insure a safer and more satisfactory procedure. The purpose of this paper is to illustrate how easily this can be done.

History of Hypnosis

Ever since mankind settled into tribal communities, hypnotism has played a part in human life. Practiced by witch doctors, medicine men, shamans, priests and religious leaders, though never admittedly as hypnotism, its phenomena were often described as miracles performed by the Gods. Today it is seen in the rituals of many of the Oriental, African, Polynesian, American Indian and other races. The Hindu Fakir on a bed of nails and South Pacific fire

* Head of Department of Anesthesia, Garfield Park and Northwest Hospitals, Chicago, Illinois.
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dancers probably make use of hypnotic anesthesia to pain. Hypnotism undoubtedly has reached its highest development among the Indian Yogis of today whose methods merit careful study.

The more modern history of the science is generally said to begin with Franz Anton Mesmer, a Viennese physician of the late 18th and early 19th centuries. Mesmer, from whom the commonly associated term "Mesmerism" is derived, believed in Paracelsus' theory that the world is surrounded by an invisible, life-giving magnetic field, "the fluidum". Intensifying this field by means of magnets could overcome disease and restore health.

James Braid, a Scotch physician practicing in England, became interested in this so-called magnetism, aware that some unusual force was involved. Dr. Braid is responsible for the "eye fixing" technique as part of the procedure and the conclusion that suggestion was the real explanation. It was he who coined from the Greek word Hypnos, meaning sleep, our word "hypnotism" and "hypnosis" to describe this new science and the trance condition produced.

Mesmeric therapy and surgery with mesmerism as anesthesia was introduced to England in 1837 by John Elliotson, Professor of Theory and Practice of Medicine at London University, and then president of the Royal Medical and Surgical Society. Under Elliotson's direction in these pre-chloroform days the chief surgeon of the infirmary in London performed more than two hundred painless operations. Many of these involved the amputation of thigh, arm or breast.

A friend and correspondent of Elliotson's, Dr. James Esdaile, while in charge of a native hospital in Hoogly, India, performed more than four thousand operations painlessly. The surgical patient at that time customarily was strapped down and carved while he screamed and struggled. Esdaile used hypnotic anesthesia while performing these procedures which included more than three hundred major operations. His greatest achievement was the removing of the giant scrotal tumors then common in India — the result of filariasis. The cutting of these tumors was considered so serious that few physicians attempted the operation. Mortality was put at fifty per cent. Of one hundred and fifty cases which Esdaile operated, using mesmeric anesthesia, the mortality was only five per cent. One observer wrote of witnessing him remove a diseased eye from a patient while the other eye looked on unblinkingly.

The period from 1885 to 1910 probably marked the acme of interest in the subject, thanks to the efforts of three great French physicians who placed hypno-therapy on a sound and scientific footing. Liebeault, Bernheim and the famous neuro-anatomist Charcot practiced hypnotism on thousands of patients and their medical reports helped in publicizing its significance to doctors all over the world. The popularity of psychoanalysis and Freud's rejection of hypnotism caused its eclipse thereafter. Although Freud had originally begun his psychological work as a hypnotist he had discarded it because he had frequently failed to put his patients into a deep sleep and trance. Freud, the genius of the mind, was a failure as hypnotist.

A new cycle now seems to have begun. The subject of hypnosis has been largely "debunked," as a result of the frequent and unfortunate stage

demonstrations and exhibits by pseudoprofessionals. However, with badly needed scientific study, hypnotism should and is receiving increased respect as a legitimate branch of medical science. Five years ago the British Medical Society accepted this course as part of the official curriculum at their medical schools. Two years ago the A.M.A. went on record as recognizing this subject and is now formulating its usage into our own medical teachings. To keep abreast of these developments, it behooves you, as well, to learn, practice and employ its many facets as part of your anesthesia armamentarium.

Role of the Anesthetist

Few things are of more value to the newly admitted, presurgical patient, than to meet the individual who is to put him "to sleep". If done properly the warm, welcoming and sincere face of "his" anesthetist does much to put the patient at ease. He already knows the attending physician, who has made the necessary arrangements for his operation. He has met, or at least has heard what a wonderful surgeon will perform it. The room rate, the name of his roommate, the diet menu and the number of enemas to be received, are all familiar to him by the time you make your appearance. Yet, of all these vital points of information supplied, none are more vital than the questions and fears he possesses concerning who is going to put him to sleep, how will he go to sleep, and if—and this is a big if—he awakens will he be sick, in pain or what secrets he uninhibitedly has confessed.

This is an opportunity for promotion that is the envy of all those associated in Sales, Advertising and Public Relations. I implore you not to neglect this most gratifying chance to build up your own stature of prestige, that of your profession, and most important, of reassuring this scared individual. It will take but a few moments to answer his questions, assure him of your sincere intentions in his behalf, and to offer guarantees that you are his friend and will be waiting for him in the operating room. If a few well placed suggestions at this time will aid in allaying his anxieties, you have scored well. Call this hypnosis or what you will, be it mere conversation or deep mesmeric direction, this interview is invaluable.

When the moment comes for the patient to be brought to the operating room he remembers that his own—yes his very own—anesthetist will be there to receive him. He cares not how many other cases you have had that morning or how tired you are from the emergency case and deliveries of the night before. His friend, his ally, his protector is there — and ready. Thus, he is now all yours and all suggestible at this time. Grasp this opening. Use it. Suggest to the patient as the needle is being put into his vein that this is the only part of the surgical procedure he will be aware of. In a few moments he will be pleasantly and relaxingly asleep. After what will seem like only a minute or two he will awaken happy in the knowledge that the operation is over and that all has gone well. He might have a little discomfort, but this will be taken care of. It will be to his advantage if he takes frequent deep breaths, moves his legs and arms as instructed, will remain cooperative for his own good and so on. Amazing as this might seem, the patient recalls your kindness and gentleness; is thrilled that he has survived; and generally will follow most of your in-

structions. The result—easier induction, less anesthetic agents necessary, and postoperative complications (atelectasis, pneumonia, nausea, vomiting, thrombophlebitis) kept to a minimum.

Additional Uses of Hypnoanesthesia

Hypnoanesthesia is decidedly useful in other phases of patient care. Whenever I am asked what I consider the most desirable and safest anesthetic for childbearing I answer, unhesitatingly, "Hypno - anesthesia". There is no problem of the agent passing through the placental barrier to affect the child, there is complete freedom of mother discomfort; the perineal relaxation is extremely adequate, simplifying the task of the obstetrician, and lastly it is a pleasure for the anesthetist. The pre- and post-partum care of the patient is controlled without medication, to the delight of the mother and her family.

Many other annoying disturbances found in the hospital, such as hiccoughing, inability to urinate, poor postoperative appetite, excruciating and intolerable pains requiring large amounts of narcotics and sedatives, poor cooperation in prophylactic coughing and deep breathing exercises, early ambulation and mood amelioration—all can be reasonably, if not completely, aided by hypnotic suggestions.

Time does not allow me to describe some of the interesting cases I have been fortunate to be associated with over the years. However, I might just briefly state that, using hypno-anesthesia as the sole anesthetic agent, we have successfully performed the following procedures: Lobectomy, cholecystectomy, herniorrhaphy, appendectomy, breast and extremity amputations, D & C, multiple teeth extractions as well as other major oral cavity procedures, and, of course, innumerable deliveries.

Technique of Hypnosis

The actual mechanism of hypnosis is relatively simple, depending on the subject and the prestige relationship between him and the hypnotist. In general I favor the gentle, friendly, persuasive approach. This sometimes is known as "mother hypnosis" as opposed to "father hypnosis". The latter relies on a stern authority, the command — sleep!

It is important to insure the proper environment, although this is not always necessary. Thus, one can use the operating room with its bright lights, shiny instruments and fast moving and talking nurses for the purpose. The subject should sit in a comfortable chair or recline. A preliminary conversation in which the patient is assured that no harm could possibly come to him, that he will not be disgraced, and that he will be awakened shortly, feeling very much better, should be done to place him at perfect ease. Any question in the subject's mind should be simply answered so that there be no misunderstandings.

All procedures are essentially alike and can almost be classified in a basic formula. *Misdirected attention* plus *belief* equals the *hypnotic state*. The prime requisite of effective hypnosis is the belief of the subject in both the competence and the integrity of the hypnotist. He must believe in hypnosis as an actual phenomenon; and he must believe in the inevitability of his personal surrender. With belief as a starting point, the subject must be conditioned to expectation.

Once suggestion works, the subject expects the next to take effect. When he expects to go to sleep, he will go to sleep and not before.

The element of progressive suggestibility is the basis of all means of persuasion and operates as the guiding principle in the induction of the state of hypnosis. The language may vary. The procedure may be altered. The style may be entirely different. But the basic principle of progressive suggestibility must be adhered to religiously.

Most important at the beginning of any hypnotic experiment is the outward appearance of absolute confidence and authority on the part of the hypnotist. Any indication of weakness or uncertainty, timidity or shyness on his part will destroy the faith and prestige relation and will result in resistance against hypnosis and the hypnotist.

Conclusions

An attempt has been made to offer certain suggestions where the use of hypno-therapy and hypno-anesthesia may be utilized by the anesthetist.

A brief review is offered, illustrating certain situations by which the welfare of the patient may be enhanced so that a more successful and pleasant operative course can be assured.

It is my sincere wish that if you received no message from this paper other than a spark of enthusiasm to learn more about this fascinating subject then my effort has been fruitful.

Balanced Analgesia

Aben Hoekman, M.D.*
Pontiac, Michigan

Introduction

A few decades ago surgery was considered a dangerous process not to be entered into lightly. It was an accomplishment to get the patient from the operating table alive. During intervening years improved concepts of adequate oxygenation, elimination of CO_2 and the muscle relaxants have assured the patient of a near certainty of survival. Today with more skillful administration of lighter anesthesia, with reduced amounts of drugs, it is possible to maintain the patient in as good physiological condition as existed prior to surgery.

Historical

Analgesia produced with ether was first described by Snow in 1847.[1] Snow observed that an analgesia state existed after emergence from deeper stages of ether anesthesia, but in the ensuing years it was not deemed feasible to use the analgesic state for surgical procedures. After using ether analgesia for dressing wounds and minor operations during World War I, Gwathmey[2] introduced "synergistic analgesia" in 1921, using a combination of ether and oil rectally, and morphine and magnesium sulphate intramuscularly. In his textbook on anesthesia Gwathmey stated, "We consider analgesia by this method safer than any other method of anesthesia."

However, the enthusiasm for analgesia waned and it was considered desirable to carry patients in surgical anesthesia beyond the danger of heightened excitement, increased reflex irritability and vomiting.

The idea of analgesia was not revived until 1955 when Artusio[3] from Cornell University Medical College, re-evaluated it. After intubation in surgical anesthesia, Dr. Artusio quickly lightened his patient to the analgesic state. Patients operated under ether analgesia answered questions, suffered no pain, and had no memory postoperatively for the entire event. Subsequently several papers on the use of the analgesic state for major surgery have appeared.[4, 5] One of the most recent is the publication of Sweet and Santos[6] from the University of Michigan on *"Balanced Analgesia for the Poor Risk Patient Undergoing Thoracic Surgery"*.

Technique

All patients are visited the day before surgery. By means of a rapid checkoff system, a functional evaluation of the patient is obtained. Past anesthetic and drug experiences are discussed and the anxious patient is reassured. Pre-operative medication consists of an adequate dose of pentobarbital or secobarbital at bedtime

* Anesthesiology Department, Pontiac General Hospital.
Presented at the Upper Peninsula meeting of the Michigan Association of Nurse Anesthetists, September 19, 1959.

and a moderate dose of morphine and scopolamine given subcutaneously one hour prior to the scheduled time of surgery. In case of a history of allergies, especially asthma, an antihistamine (usually 25 mgm. of Phenergan) is also given with the preanesthetic hypodermic. In the latter case the dose of opiate is often reduced. Tranquilizers are used when indicated, especially if the patient's surgery is scheduled for late morning or early afternoon. Pre-anesthetic visits are done by one of the anesthesiologists on the staff on an alternating basis. On the following day this person acts as circulating anesthesiologist. It is his duty to assign the cases to the various anesthetists and to decide, in collaboration with the surgeon, the preferred anesthetic in poor risk cases.

Upon entering the operating room, the effectiveness of the pre-anesthetic medication is evaluated. Ideally the patient is quite drowsy and relaxed but still cooperative and able to answer questions correctly. If less well relaxed, small doses of Demerol (usually in 10 mgm. increments), are given intravenously.

In all cases an avenue into the blood stream is provided using a 5 per cent dextrose solution and an 18 gauge needle. For induction, Pentothal is given in divided doses (usually not exceeding the total of 250 mgms.), nitrous oxide, oxygen (4:2 or 2:1) and a drip of 0.1 per cent succinylcholine are initiated as soon as the patient falls asleep. Additional small doses of Demerol may be used but not sufficient to reduce the respiratory rate below 12 per minute.

If intubation is to be done, induction differs from that described in that a single shot of succinylcholine (usually 40 to 60 mgm.) is given, the pharynx and larynx sprayed with 2 per cent Xylocaine, and the patient ventilated with 100 per cent oxygen just prior to intubation. An oropharyngeal airway is generally necessary when intubation is not done. Respiration is usually assisted from the start and throughout the period of surgery.

If grimaces or clenching of the fingers indicate patient discomfort an increase in the safe concentration of N_2O or an additional small dose of Demerol is preferred. However, an increased rate of succinylcholine drip may be used temporarily until the adjustment in concentration of nitrous oxide or addition of Demerol has time to take effect. Instead of Demerol, ether, cyclopropane or Fluothane can be added to the nitrous oxide - oxygen mixture in analgesic amounts.

Comments

Proper pre-anesthetic medication is an important component of light anesthesia with Pentothal-nitrous oxide-oxygen. Scopolamine is preferred to atropine because of its sedative, amnesic and greater drying effects. It also has less tendency to produce tachycardia. Morphine is used for sedation and for the relief of worry and anxiety. Morphine in the doses used has little effect on the blood pressure, heart rate or rhythm. Its depressant effect on respiration may be counterbalanced by a depression of the metabolic rate[6]. Morphine and scopolamine are essential aids to light anesthesia.

Of the muscle relaxants, succinylcholine is preferred because of its

short duration of action and controllability. It is interesting that Sweet and Santos[6] reported using subrelaxant doses of succinylcholine "to prevent the initiation of possible dangerous reflex cardiac arrhythmias from the operative manipulation inside the chest."

Thiopental or thiamylal are used to obtain a rapid and smooth induction. These agents lack analgesic properties and can contribute little to the maintenance of analgesia. Usually not over 350 mgm. are used during the period of induction and surgery. Moreover, these agents are not rapidly destroyed in the body as was formerly supposed. Large doses may leave the patient with cerebral depression, including depression of the respiratory center, for many hours.

It has long been known that an animal when awake will tolerate about twice as much blood loss as when anesthetized. For this reason, blood transfusion requirements are generally less in lighter anesthesia than in deeper levels. It has been shown that vasomotor tone and integrity of the capillary bed are more seriously deranged during deep anesthesia.[7] Also depressive vagocardiac reflexes occur more frequently during deeper planes of anesthesia.

After light anesthesia, the patient awakens quickly and cooperates early by breathing deeply and coughing effectively, thereby preventing pulmonary complications. Likewise the blood pressure follows a more stable course to pre-anesthetic levels. In short, light anesthesia provides a wider margin of safety for the patient and a relatively shorter and more uneventful period of recovery.

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Motivation and Evaluation of Students in Schools of Anesthesia for Nurses

Sister M. Yvonne, F.S.P.A., C.R.N.A., B.S.*
La Crosse, Wisconsin

Behavior! Conduct! The terms behavior and conduct are frequently used interchangeably to connote the manner in which a student directs his actions, but they are seldom employed with the full impact that is basic to their understanding, and consequently to that of human nature. A deep insight into the causes of behavior enables a person to control human conduct, his own as well as that of others. On the other hand, it can be very difficult to regulate conduct when one's insight into human behavior is only superficial. By illustrating the dynamic force of human conduct, namely, motivation, I shall try to set forth a better understanding of human behavior and the associated educational significance.

By way of preliminary, the clarification of a few terms is necessary. The first are "motive," "motivating" and "motivation." Having their common etymological basis in the Latin verb, *movere,* they take on the meaning "to move," "to set in motion," or "to prompt to action." More specifically, however, each of these terms has a different connotation. A motive is some thing or action, intellectually perceived as valuable, and as such appeals to the will. Motivating refers to *any factor* that will move the human organism to action, whereas motivation involves the process of presenting or making the motivating factor known to the individual and stimulating activity. From these definitions it is evident that these three elements are functionally related.

A second term to consider is "dynamic." The term, as used here, related to activity; motivation is a dynamic force in human conduct because it is a propelling power moving the individual toward a particular goal, whether it be an object, an act, or any experience.

With these terms firmly established, the purposes of motivation are apparent. The first is to stimulate self-activity in student anesthetists in order that they will be moved, uninhibited by subjectivity, toward their goal. Self-activity may be aroused by satisfying the present needs of student anesthetists, that is, by creating and producing a strong desire among them to learn the art and science of anesthesia. A second purpose of motivation proceeds from the first: to direct the aroused interest and activity toward the realization of definite goals, that is, to be an efficient progressive anesthetist.

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* Director, St. Francis Hospital School of Anesthesia, La Crosse.

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Intimately bound up with the purposes of motivation is its nature. In a broad sense, and for the present purpose, we can say that all behavior is motivated and that motivation has a role in all learning. Motivation is a sort of stimulation which is interpreted by the individual as a need. This stimulation persists until one's sense of need is satisfied by engagement in self-activity. In logical sequence, all behavior is motivated to the extent that a pattern of stimulation precedes and influences it.

Concerning motivating factors, there are three basic types which function in the dynamics of human conduct: needs, motives, incentives, and goals. Incentives and goals may be likened to by-products of needs and motives. It will be remembered that "motivating" pertains to any factor that will move the human organism to action.

In a strict sense, motives include only those which bring about immediate action, and directly appeal to the will. Actually, the most difficult part of forming a motive is deciding whether a subject or technique has real, or only apparent value. A subject that appeals to the sensitive appetites may be a need or only a desire. The will is the faculty which discerns the relationship between need and desire, and being free it may apprehend a desire as good when it is not necessary for the fulfillment of a need. In another instance, a need may serve as a motive when an object is regarded as valuable because it satisfies some basic craving. Whether a stimulus to the will has real, or only apparent value depends upon the subject, the physical and mental make-up of the individual, his emotions and feelings, habits, attitudes, and experiences. In this place it is important to note that a motive must achieve a suitable strength before it can move the will. The strengthening of a value is always an asset in helping us over the margin of indecision.

Incentives

Incentives can be either emotional, intellectual, or social. Under emotional incentives are classified praise and reproof, reward and punishment. The effect of praise depends, to a large extent, upon the person giving it. Individual differences must also be considered. Blame or reproof may serve as a positive incentive in some cases. Donald Laird in his book, *The Technique of Handling People,* has made a comment of the use of praise that I think is quite to the point: "Praising people is like making love to a widow — you can't overdo it."

Rewards, too, should be used with discretion. They must never be given for fulfillment of duty but only for those tasks in which extraordinary effort has been put forth. Because of their attractiveness, they are effective in motivating conduct.

Punishment is a negative motivating factor. The associated feelings of pain and unpleasantness make it useful if used properly. As a threat, punishment is without purpose unless the recipient has previously had the associated experience. A specific relationship likewise must exist between the wrong act and the nature of punishment in order that the association is realized by the student and that he is impressed by it. For this reason, punishment should be immediate and used only when absolutely necessary. In addition, the student must be aware of the justice and necessity of

the punishment; that it does not follow from resentment or hostility on the part of the one inflicting it. Since all these conditions are hard to meet, desirable conduct should be motivated, whenever possible, by positive means rather than by punishment.

From emotional incentives we proceed to the intellectual incentive which is knowledge of results. Working for high marks is valuable in motivating learning only insofar as students have faith in the validity of their marks. Grades, however, are not the only means of disclosing knowledge of progress. Praise and reproof, teacher-pupil conferences, and charts of progress are also helpful.

As social incentives, competition and rivalry should be used constructively. Competition with oneself is more effective than either personal or group competition and this trend is gradually becoming more apparent in our educational systems.

Goals

To achieve a specific goal is the aim of all motivation. Goals, like motives, are perceived as desirable; unlike motives, they are not proximate and transitory. Concerning the quality of goals, they may be either subjective or objective. A subjective goal would be apparent in an individual's interest in anesthesia because the acquisition of knowledge and skill would satisfy his instinctive craving for intellectual activity. Taking the same example, an objective goal in anesthesia might be the refinement of personality, the acquiring of honor, or the introduction to a professional class of people such as doctors. Undoubtedly, subjective goals are of the highest quality.

Now that the motivating factors have been considered, their dynamic aspect warrants attention.

Dynamic Factors

Motives are not necessarily dynamic, that is, they do not always incline one to action, because our higher and lower appetites are often in conflict. Motives, then, may have varying degrees of attractiveness. One may see the objective value of an assignment or technique, but whether he is moved or not depends upon the subjective value it has for the individual. In addition, feelings and emotions accompanying motivation may assist or hinder the will in being moved in the right direction. Here the teacher exerts an important influence in motivational development.

You as a teacher have an important role to play. If you take the *U* out of ch*u*rch, cl*u*b, ind*u*stry, you have nothing left. So, too, in your teaching you have to spur up your daily enthusiasm on the belief that it is worthwhile to sow a thousand seeds in the hope that possibly tomorrow just one of them will sprout and take root; or that just one drop of watering you give to what looks like dead stalks will enliven and sustain some bit of growth. You as a teacher and director are not just molding students, but as a true teacher you should awaken something that will unfold and grow.

The model principle of motivation was exemplified by Our Lord who prepared his listeners for the great truths they were about to receive. The miracle of the multiplication of the loaves in the sixth chapter of St. John preceded the promise of the Eucharist. Similarly, the miracle of giving sight to the man born blind preceded the pronouncement that his sins were forgiven.

Aims

One of your educational aims today should be to stimulate inherent interest in your classes and to make them lead to permanent and desirable interests. The attitude of the mind toward study has great significance. Bolton says, "Learning which is not the outcome and accompaniment of pleasurable interest does not call forth genuine self-activity and does not give training." When a subject is presented as useful and interesting, it summons self-activity; a moving to action. If you make your classes interesting you will be able to overcome student inertia and raise the level of their initiative.

An aspect of motivation is the level of aspiration which refers to the difficulty of a task or goal an individual sets for himself toward which he works. The teacher is largely responsible for the level of difficulty, but only the student can determine his level of aspiration. Each student must be stimulated to work to his presently indicated level of ability. Associated with the three levels of aspiration are the three levels of difficulty. First, the student can perform the assignment and accept the challenge presented. In another instance, the assignment may be too easy and the student becomes bored. To avoid inappropriate levels of aspiration, praise must be used in terms of the individual, and personally significant challenges must be presented. Every student must experience success, and pupil-teacher evaluations are essential.

The teacher's problem in motivation in anesthesia is to initiate a desire on the part of the student for a particular kind of knowledge and skill not acquired in other branches of nursing. This need may already exist with the student before he enters the school, or it may be developed with the teacher's assistance. In either situation, the teacher's task is to see that the need to learn is sensed by the student, that its importance is recognized, and that purposeful progress is made toward its realization.

To accomplish successful motivation, the teacher must use those approaches that will make the student eager for the kind of learning the school endorses. Again, I repeat, classes should be organized so that they will bring satisfaction to the students, fulfill a need to obtain useful information, art and skill. Pursuits chosen by the students are more powerful motives than those selected by the teacher.

If the teacher understands differences between students, uses materials that are appropriate to the understanding and interest of individual students, and permits each student some freedom for growth toward his unique needs, she will be laying the basis for immediate and effective motivation.

Clinical Work

Since evaluation of clinical work is so closely related to motivation, it deserves some attention at this point. First of all, what is the purpose of evaluation? Ralph Tyler gives us six rather inclusive points. They are: (1) to make a periodic check on the effectiveness of the program, (2) to validate the hypothesis upon which the curriculum operates, (3) to provide information basic to effective guidance of individual students, (4) to provide a certain psychological security to the staff, the students, and the parents, (5) to provide a sound basis for public relations, and (6) to help both faculty and students clarify

their purposes and see more concretely the directions in which they are moving.

In discussing student - evaluation, we should be clear as to what we are evaluating. First, we do want to evaluate the effectiveness of our teaching program—of the curriculum and the knowledge that our students get. This area may be likened to the raw materials that go into the making of a good anesthetist—the general principles which are learned in the theory and the clinical work which is taught. Here we have our regular check-tests, course examinations, and finally the national qualifying examination to help in the problem of evaluation.

The second area of evaluation is more personalized. The question arises: "How can the general principles or the abstract theoretical knowledge of the classroom be best given to this particular group—or for this individual? Here, it can be seen, the emphasis is not on general education but on guidance; not on the basic raw materials which are offered but to their more specific preparation. The selection of raw materials to be presented to the students can be likened to the work of a farmer who grows the foodstuffs which will provide an adequate diet: proteins, carbohydrates, minerals, etc. But these basic foodstuffs must be tastily and skillfully prepared for the particular individuals who will be served; otherwise it will not provide the desired nourishment. So the teacher must know also the particular tastes and needs of the individuals within the group if they are to be nourished effectively.

There is still another area that must be taken into account when dealing with students. Just as the best of food, most skillfully and tastily prepared will still not benefit the person whose digestive system is out of order, so adequate teaching and skillful guidance and motivation may still fall short of producing desired results if the student cannot digest and assimilate what is given to him. Where a student is emotionally disturbed, he cannot receive the teaching nor accept the guidance; then he may be in need of counseling which is quite a different approach and not as well understood today. Counseling means, then, an additional skill and understanding of the common and yet complex emotional and personality problems of the person. In this area we do not seek external evaluation of the student as a means of aiding him. But we seek to inaugurate a process of change in the person himself, to increase his own self-knowledge and self - reorganization. From such knowledge can come a gradual new awareness of better personal means to goals which education and guidance have directed him. This skill is a person-centered approach. Communication is a direct tool for motivation.

Communicating

One of the most difficult problems in student - director relationships is that of communicating effectively. The effectiveness of a person's communication with others is in direct relation with his vision, skill, objectivity, understanding, and adjustability. We must try to present ideas in such a way as to make friends and promote confidence and relaxation. There are several roadblocks to communication which the director must overcome in her communications with her students. First of all she must be a good listener. Directors are much too impatient in listening to others.

This reminds me of a story about a psychiatrist. He was approached by a timid little boy seeking help for his problem. The psychiatrist asked him if he had discussed this problem with anyone else. The little fellow replied he had gone to the druggist at the corner drugstore. The psychiatrist was furious to think he would ask help from such an individual and expounded angrily on laymen who do more harm than good. Then he asked the boy what advice he had received. Meekly, the little boy replied, "He told me to come and see you!" Another summary of Donald Laird, which is appropriate is, "You have two ears and one mouth; use the ears twice as much." Another comment that anesthetists should be interested in, is one in which he refers to proper breathing as a health habit, saying, "Breathe through your nose; then you will keep your mouth closed."

The director in counseling the student must have an attitude that is free from any trace of a threatening attitude. In an interview the director always remains neutral and avoids cross examination. If cross examined the student will develop the idea that the director has no sympathy and is already prejudiced. First, let the student express the hostility, fear or self-deprivation he feels. The director, however, should not become affected by it, but wait to share the facts after the student has cleared himself of his own feelings. The director should develop the attitude that anyone can come to him as a child goes to a father or a mother and knows they will have their interests at heart. When dealing with human beings one must remember that they are complex persons and cannot always express what they have in mind.

Conclusion

How can our students attain happiness and success? They must learn to make adaptations between themselves and their environment. The director must teach them to balance their life.

Their life should be balanced, like a triangle, with recreation, religious philosophy, and work. Recreation may be such as collecting stamps, reading, dancing, music and sports. Religious philosophy is vital to mental health and has something valuable to give the student. A story exemplifies this: A little boy in an air raid shelter during World War II said this prayer, "God bless mother and daddy and all the people in this shelter and please God, take good care of yourself because if anything happens to you we are sunk." Last but not least, work must bring the student satisfaction. In order for it to be of value to the individual he must be able to see the end result.

The material presented in this paper represents but a small fraction of the field of motivation and evaluation. It may seem to you that some of it was unrelated to motivation and evaluation of students in our schools of anesthesia. I submit, however, that the principles mentioned were an effort to bridge the gap between students and directors. The gap has not been spanned, but narrowed and should result generally in better relationships.

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Survey of Nursing Anesthesia:

personnel, policies, and procedures in Minnesota hospitals, 1956-1957*

Part II

Martha J. Lundgaard, C.R.N.A.† Helen L. Knudsen, M.D., M.P.H.‡
William C. Harrison, M.D., M.P.H.§ Bernard A. Wolcyn, Ph.D.‖
and Robert M. White, Ph.D.¶ Minneapolis, Minnesota

Facilities

Operation and Delivery Rooms. All hospitals had one or more operating rooms. One hundred and fourteen (62%) had only one operating room, while sixty-eight hospitals had two or more. A total of 424 operating rooms was reported.

Of the 175 hospitals (96%) with obstetrical departments, all but 15 hospitals had one or more delivery rooms. Of the 15 hospitals without a delivery room, 13 used the operating room as a delivery room. A total of 203 delivery rooms was reported.

Recovery Rooms. Forty-seven hospitals reported that they had recovery rooms. All but one were located in hospitals with 30 beds and over (see Table 9). All the recovery rooms had equipment to administer oxygen either by BLBs (Boothby, Lovelace and Bulbulian mask) or by resuscitators. Seventy per cent of the hospitals that had recovery rooms reported piped-in oxygen while the remaining hospitals used oxygen equipment on tanks transported by carts. Medical supervision was maintained in every recovery room either by a medical anesthesiologist, a surgeon, or both. In addition every recovery room had a registered nurse in charge of the nursing service.

Fire and Explosion Prevention. Of the 179 hospitals (98%) reporting on fire and explosion prevention features, over three-fourths (77%) had ungrounded electrical systems, approximately the same proportion (75%) had explosion proof equipment and three-fourths of the hospitals (60%) had conductive floors (Table 10). A number of hospitals had installed conductive floors in surgery originally but stated at the time

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† Nurse Anesthetist Consultant, Minnesota Department of Health.

‡ Director, Division of Hospital Services, Minnesota Department of Health.

§ Director, Division of Local Health Administration, Minnesota Department of Health.

‖ Coordinator of Hospital Services Study, Minnesota Department of Health.

¶ Formerly Research Director, Hospital Services Study, Minnesota Department of Health, now associated with U.S. Office of Education, Division of Higher Education, Financial Aid Branch, Guidance and Counseling Institutes Section, Washington 25, D. C.

Table 9

Recovery Rooms in Minnesota Hospitals, 1956 - 1957

Bed Capacity	No. Hosps.	No. Hosps. Reporting	Recovery Rooms		Medical Supervision*		Equipment				
			No	Yes	Anesthesiologist	Surgeon	Gas Machine	Resuscitator	Piped-in Oxygen	B.L.B. on Tanks	Other Resuscitation Equipment
131 and over	30	30	2	28	21	11	10	14	19	9	17
71-130	21	21	11	10	0	10	0	5	9	1	5
31-70	49	49	41	8	1	8	1	2	5	3	5
21-30	41	41	40	1	1	1	0	1	0	1	0
0-20	41	39	39	0	0	0	0	0	0	0	0
Total	182	180	133	47	23	30	11	22	33	14	27

* Medical supervision was assumed by both medical anesthesiologist and surgeon in some hospitals.

of the survey that the floors had lost their conductivity.

ANESTHESIA PROCEDURES

Techniques of Administering Anesthesia. Although all hospitals in the State gave some type of anesthesia, considerable differences in the frequency of use of certain anesthetics and techniques were observed in Table 11. The most common were drop ether, sometimes with vinethene, and local anesthesia which were used in nearly every hospital. Pentothal or surital sodium were given in over 164 hospitals (90%). A higher percentage of pentothal so-

Table 10

Number of Minnesota Hospitals with Fire and Explosion Features in Operating Rooms, 1956 - 1957

Bed Capacity	No. Hosps.	No. Hosps. Reporting	Ungrounded Electrical Systems	Explosion-Proof Equipment	Conductive Floors	None of These Features
131 and over	30	30	23	27	22	1
71-130	21	21	19	21	12	0
31-70	49	49	43	39	33	6
21-30	41	40	31	28	23	7
0-20	41	39	23	20	18	13
Total	182	179	139	135	108	27

Table 11

Number of Minnesota Hospitals Reporting Use of Certain Anesthetics and Anesthesia Techniques, 1956 - 1957

Bed Capacity	No. Hosps. Reporting	Local	Caudal	Spinal	Rectal	Drop Ether	Chloroform	Trilene or Trimar	Pentothal or Surital	Nitrous Oxide and Oxygen	Cyclopropane and Oxygen	Other
131 and over	30	30	11	30	4	30	3	23	30	29	25	3
71-130	21	21	5	20	1	21	2	13	20	20	10	3
31-70	49	49	5	42	2	49	6	37	48	45	18	3
21-30	41	41	3	30	0	41	5	34	36	30	12	0
0-20	39	37	0	24	0	38	7	28	30	19	5	0
Total	180	178	24	146	7	179	23	135	164	143	70	9

dium was given in the larger hospitals which probably reflects the availability in those hospitals of persons trained to administer this anesthetic. Chloroform was used in only 23 hospitals (13%). There was some tendency for chloroform to be used proportionately more often in the smaller hospitals. The ease of its administration and its non-inflammable characteristics were the reasons given for its use.

All local, spinal and caudal anesthetics were administered by physicians or medical anesthesiologists with the nurse anesthetist, when needed, caring for the patient after the injection of the drug and throughout the course of the operation.

Anesthesia Personnel Trained in Endotracheal Techniques. Over one-third of the hospitals (37%) indicated that all their anesthesia personnel had been trained in the endotracheal technique. Sixty-one hospitals (35%) indicated that none of their anesthesia personnel was trained in this technique and the remaining hospitals (28%) stated that some of their anesthesia staff were trained.

Whereas two-thirds of all hospitals in the State reported that some or all of their anesthesia personnel were trained in this technique, in nearly three-fourths of the hospitals the anesthesia personnel were trained to continue with the anesthesia after the intubation.

Personnel Performing Intubations. Of the 144 hospitals (80%) with endotracheal equipment, 8 (6%) indicated that only medical anesthesiologists performed the intubations. Nearly one-fourth of the hospitals indicated that only physicians performed the intubations and 32 (22%) stated that only nurse anesthetists performed this procedure. In the remaining one-half of the hospitals, several of these persons performed the intubations.

Number of Intubations. Fifty-one of 176 hospitals (29%) recorded data in a form useful for determining the number of intubations. Approximately one-fourth did not perform intubations. The average number of intubations given for the year of 1956-1957 in hospitals of varying size

is shown below. The very marked relationship between bed size and frequency of use of this technique undoubtedly reflects both the tendency for more difficult operations to be performed and for more highly trained persons to be employed in the larger hospitals.

Bed Capacity	131 and over	71-130	31-70	21-30	0-20
Ave. Annual Number of Intubations	402	295	48	34	8

Types of Anesthesia Given by Persons Other than MDA's, Physicians and Certified Registered Nurse Anesthetists. Over one-half of the hospitals (51%) employed personnel other than MDA's, Physicians or CRNA's who gave several types of anesthesia. This was especially true of hospitals having 70 beds or less. The more easily administered anesthetics such as trilene and drop ether were given more often by such persons, as shown in Table 12.

Administration of Intravenous Fluids in Surgery. Intravenous fluids were given routinely in the operating rooms of 165 hospitals (91%), and over 4/5 of these used 5% dextrose with distilled water. Nineteen hospitals used 5% dextrose in saline, while some hospitals gave several combinations of intravenous fluids. Three-fourths of the hospitals indicated that the nurse anesthetist did the venipuncture.

Types of Anesthesia and Personnel in the Obstetrical Department. Local, spinal and caudal anesthetics were administered for deliveries in 94% of the hospitals. Trilene or trimar was administered in 138 hospitals (79%), ether in 136 (78%) and chloroform in 18 hospitals (10%). Other types of anesthetics such as nitrous oxide, cyclopropane and oxygen were administered in 75% of the hospitals.

The tendency in many hospitals was for an analgesic drug such as trilene to be administered through the first stage of labor with pudendal block and an inhalation anesthetic

Table 12

Types of Anesthesia Given by Persons Other than MDA's, Physicians, and CRNA's in Minnesota Hospitals, 1956 - 1957

Bed Capacity	No. Hosps.	No. Hosps. Reporting	Drop Ether	Trilene or Trimar	Nitrous Oxide, Other Gases + Oxygen	Pentothal Sodium	Muscle Relaxants	Other
131 and over	30	29	5	8	8	1	1	7
71-130	21	20	5	5	5	0	0	2
31-70	49	49	24	20	11	3	0	5
21-30	41	41	22	24	6	1	0	4
0-20	41	39	22	22	7	2	1	7
Total	182	178	78	79	37	7	2	25

administered for the delivery. This accounts for more than one individual giving analgesia and/or anesthesia to the patient.

Physicians administered pudendal blocks, spinals or caudals for the obstetrical patient in 94% of the hospitals. In 98 hospitals the inhalation anesthesia for the obstetrical patient was given by the anesthesia personnel from the surgical department (CRNA, non-CRNA, short-trained, on-the-job anesthesia trained RN). In the urban hospitals, anesthetics were usually administered by the formally-trained nurse anesthetists for all obstetrical patients. In those rural hospitals where one formally-trained nurse anesthetist was employed to cover all anesthesia services, that individual was called for difficult obstetrical cases only.

In 166 hospitals the full-time and/or part-time registered nurses employed in the maternity section administered analgesia and/or anesthesia for the obstetrical patient. In 18 of these hospitals the RN supervisor on the maternity floor gave the anesthetic. In sixty-one hospitals other personnel with less than RN training who were employed in the obstetrical department administered analgesia and/or anesthesia to the obstetrical patient. In all cases the obstetrical anesthesia services were supervised by physicians on the case.

Number of Anesthetics Administered in Minnesota Hospitals. Of the 212,776 anesthetics administered in surgery during a one year period in the general hospitals of the State, two-thirds were given in 17% of the hospitals. In contrast, 53% of the 78,009 obstetrical anesthetics administered during the same one-year period were given in 16% of the hospitals, as indicated in Table 13. It appears that patients who have major surgery tend to go to larger hospitals where the facilities and personnel are considered better. This is further evidenced by the high ratio of surgical anesthetics to obstetrical anesthetics in the 131 beds and over hospitals as shown in Table 13, and the drop in the ratio as bed size decreases.

Table 13

Number of Anesthetics Administered in Minnesota Hospitals, 1956 - 1957

Bed Capacity	No. Hosps.	Surgery			Obstetrics			Ratio Surgery/ Obstetrical Anesthetics
		No. Hosps. Reporting	Anesthetics Administered	Per Cent of Total	No. Hosps. Reporting	Anesthetics Administered	Per Cent of Total	
131 and over	30	29	143,930	67	27	40,977	53	3.5 to 1
71-130	21	20	29,305	14	17	11,541	15	2.5 to 1
31-70	49	45	23,400	11	46	15,067	19	1.5 to 1
21-30	41	40	10,137	5	39	6,074	8	1.6 to 1
0-20	41	37	6,004	3	40	4,350	5	1.4 to 1
Total	182	171	212,776	100	169	78,009	100	2.7 to 1

Table 14

Persons Responsible for Rules and Regulations in Anesthesia Departments of Minnesota Hospitals, 1956 - 1957

Bed Capacity	No. Hosps.	No. Hosps. Reporting	No One Designated	Administrator	Anesthesiologist	Chief Nurse Anesthetist	Other
131 and over	30	30	0	16	20	20	0
71-130	21	21	1	19	2	16	2
31-70	49	49	0	46	2	28	4
21-30	41	40	0	40	3	20	4
0-20	41	39	1	38	1	12	4
			2	159	28	96	14
Total	182	179	299*				

* Responsibilities were shared by more than one person in several hospitals.

ADMINISTRATIVE MANAGEMENT

Persons Responsible for Rules and Regulations in the Anesthesia Department. As head of the hospital, the administrator was usually responsible for the establishment and maintenance of regulations in the anesthesia department. In many cases, however, this responsibility was shared with the medical anesthesiologist and the nurse anesthetist. Evidence of this sharing appears in Table 14 in that the total number of people so designated exceeds the number of hospitals.

Responsibility for Drug Supplies in the Anesthesia Department. Drug supplies were determined for anesthesia departments by the joint effort of several personnel. Table 15

Table 15

Hospitals Reporting Responsibilities for Drug Supplies in Anesthesia Departments of Minnesota Hospitals, 1956 - 1957

Bed Capacity	No. Hosps. Reporting	Anesthesiologists	Other Physicians	Nurse Anesthetists	Administrators	Pharmacists	Others	Total Personnel
131 and over	30	21	10	12	0	4	1	48
71-130	21	3	20	16	1	1	2	43
31-70	49	1	47	30	22	1	4	105
21-30	41	3	41	20	20	1	5	90
0-20	39	0	36	14	18	1	3	72
Total	180	28	154	92	61	8	15	358

shows the shared responsibilities for selecting and ordering anesthetic drugs by 358 institutional and medical personnel in 180 hospitals. The decision was more often made by physicians in the larger hospitals and by nursing personnel in the smaller hospitals.

Expressed Need for a Visiting Consultant in Nursing Anesthesia. Table 16 indicates that nearly 2/3 of the hospitals (64%) stated that they could benefit from the services of a consultant in nursing anesthesia. Those hospitals not indicating a desire for consultant assistance either had medical anesthesiologists or were Catholic hospitals with sister anesthetists, who could gain information through their own resources. The tendency to want the services of a consultant in nursing anesthesia seemed greater in the larger hospitals where full-time anesthesia personnel were employed. Those which were uncertain were usually the smaller hospitals where no full-time anesthetist was employed or where a physician gave the anesthesia.

Summary

The 182 licensed general hospitals which were operating in Minnesota in a one year period (1956 - 1957) were personally visited by the Nurse Anesthetist Consultant to obtain a descriptive picture of the anesthesia personnel, equipment, facilities and procedures. The information was obtained from the anesthesia personnel and/or the hospital administrators by the use of an extensive questionnaire. The major findings are summarized below.

1. Medical anesthesiologists supervised the anesthesia services in 17% of the hospitals. In the remainder of the hospitals, anesthesia services were supervised by physicians in charge of surgical and obstetrical cases.
2. Almost all hospitals employed full-time RN's as nursing personnel in surgery. In addition, slightly over one-third employed licensed practical and practical nurses, and more than

Table 16

Number of Minnesota Hospitals Expressing a Need for a Visiting Consultant in Nursing Anesthesia, 1956 - 1957

Bed Capacity	Number of Hospitals	No. of Hospitals Reporting	Hosps. with Uncertain Information	Need for Consultation	No Need for Consultation
131 and over	30	30	0	23	7
71-130	21	21	2	17	2
31-70	49	49	10	34	5
21-30	41	41	12	28	1
0-20	41	40	26	13	1
Totals	182	181	50	115	16

two-thirds used nurse aides in the operating rooms.

3. Approximately one-half of the hospitals in the State did not have the services of either an anesthesiologist or a certified registered nurse anesthetist. The training and background of the persons providing the anesthesia services in these hospitals ranged from RN's who may or may not have had formal anesthesia training but who have not been certified, to nurse aides.

4. There were 615 anesthesia personnel in the general hospitals in Minnesota in 1956-1957. This number does not include the 31 resident anesthesiologists and 54 student nurse anesthetists in training. Of these 615, there were 447 employed full-time in 125 hospitals. There were 168 part-time anesthesia personnel in 112 hospitals. Hospitals without full-time people had at least one part-time anesthesia person. Of the 615 anesthesia personnel, 56 were medical anesthesiologists, 19 were physicians with some training in anesthesia, 238 were CRNA's, 278 were RN's who were not certified in anesthesia and 24 had no anesthesia training.

5. Full-time anesthesia personnel averaged 6.5 scheduled hours on duty per day and 29.2 scheduled hours per week. In the hospitals employing full-time anesthesia personnel the average number of days of first call per week was 4.8. In slightly over one-half of the hospitals, the anesthesia personnel were on call every day.

6. One hundred and fifteen hospitals (62%) indicated that persons other than the regular staff anesthetists took call for the night, weekend and holidays. Hospitals of various sizes did not differ appreciably in their leave and holiday provisions with a great majority of hospitals granting annual benefits of a two week vacation, 12 day sick leave and six or seven holidays.

7. The mean maximum salary of formally-trained nurse anesthetists in the hospitals studied was $479.58 per month, whereas that of full-time anesthesia personnel without formal training was $346.91 per month. The tendency for a considerably larger salary to be paid to formally-trained anesthetists was observed consistently through all bed size categories.

8. Slightly over one-half of the hospitals used monthly salary as the basis of payment and one-fifth of the hospitals paid monthly salaries with other additional pay for call or a fee on a case or time basis. The remaining hospitals paid entirely by fees on a per time or case basis.

9. Sixty-four per cent of the hospitals expressed a need for consultant services in anesthesia.

10. One hundred fifty-six hospitals had gas machines in the operating rooms.

11. Ninety-seven per cent of the hospitals possessed and used one or more types and sizes of airways.

12. Intravenous fluids were routinely given in surgery in 92% of the hospitals. Three-fourths of the hospitals used 5% dextrose in distilled water.

13. Four-fifths of the hospitals had endotracheal equipment.

14. One-fourth of the hospitals had recovery rooms. Seventy per cent of these hospitals had piped-in oxygen in the recovery rooms.

15. One hundred and fifteen hospitals had one operating room and sixty-seven had two or more, providing 424 operating rooms in the hospitals studied.

16. A total of 203 delivery rooms was reported.

17. Over four-fifths of the hospitals indicated they had one or more fire or explosion prevention features in the operating rooms. Ungrounded electrical systems, explosion-proof equipment and conductive floors were the most frequently observed features.

18. All hospitals studied gave some type of anesthesia. The most commonly administered anesthetics in surgery were drop ether, local and pentothal sodium.

19. Local block, trilene or trimar were most commonly used in obstetrics.

20. All locals, spinals and caudals in surgery and obstetrics were administered by anesthesiologists or other physicians.

21. RN's on the maternity floors administered inhalation anesthesia in the obstetrical departments in 166 hospitals.

22. Three-fourths of the hospitals used individual anesthesia forms with 131 hospitals recording permanent anesthesia information in the surgery record books.

23. Nearly three times as many anesthetics were administered to surgical patients as to obstetrical patients. The ratio of surgical anesthesia to obstetrical anesthesia increased as the size of the hospital increased.

Conclusions

1. There is a marked shortage of formally-trained nurse anesthetists if the assumption is made that anesthesia when administered by nursing personnel should be given only by persons with approved anesthesia training.

2. The shortage of trained nurse anesthetists exists principally in small hospitals located in rural areas of the State. Further evidence of such shortage is the fact that approximately one-half of the anesthesia personnel in these areas are on call seven days a week.

3. Some hospitals are staffed with personnel who lack the professional training necessary to allow them to make full, efficient and intelligent use of such equipment as gas machines, resuscitators and positive pressure machines.

4. Since the hospitals in general have the necessary equipment, it is concluded that the primary need is for trained people, or training programs rather than for new or additional equipment.

5. Increased participation by anesthesia personnel in staff meetings, conferences, institutes and related activities must be encouraged by all concerned.

6. The lack of opportunity for anesthesia personnel to attend staff conferences and gain the values of in-service training programs occurred more frequently in hospitals without medical anesthesiologists and in those hospitals employing part-time or only one full-time anesthetist.

7. In general, anesthesia records lack quality and quantity. Quality consists of the fundamental details necessary in complete reporting, and quantity is based on an adequate amount of essential data.

8. There is both a readiness and a need for consultant services in nursing anesthesia.

Recommendations

1. An expanded program of recruitment is needed to alleviate the shortage of formally trained nurse anesthetists.

2. Plans should be developed to encourage scholarships for anesthesia training of registered nurses in the

community in exchange for a year or more of their services.

3. Educational programs for the presently employed anesthesia personnel who lack formal anesthesia training should be established. These may take the form of institutes, conferences, refresher courses, consultant visits or other suitable methods.

4. Educational materials and/or programs for hospital boards and administrators should be provided to inform them of the essential and desirable features of an adequate anesthesia department.

5. The quality and quantity of anesthesia information being recorded in Minnesota hospitals should be more complete and better organized in the interest of improved patient care.

6. Hospital sharing of available anesthetists should be encouraged whereby those who are formally trained in anesthesia can extend their services to nearby hospitals in need of such help.

7. In the construction, remodeling and maintenance of facilities greater consideration should be given to making hospitals safe from explosion and fire. More recovery rooms are needed in the existing larger hospitals.

8. If a recovery room is not planned in the smaller hospitals, the hospital should supply an emergency, movable cart containing essential post-operative and cardiac arrest resuscitation equipment.

9. A random sampling of hospitals should be considered in future surveys of anesthesia services in the State. Less time would be required to collect and interpret the data and the information to be reported would be current. It is recognized that if it is necessary to obtain detailed information concerning each institution there is no alternative but to visit each hospital.

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Legislation

Emanuel Hayt, LLB., Counsel A.A.N.A.

Patient's Death from Blood Transfusion not Result of Negligence of Hospital

This is the second appeal by the plaintiffs from a jury verdict of no cause of action for the death of the family mother, Mrs. Lucille Joseph, alleged to have been caused by the negligence of the defendant hospital. On the former appeal the case was remanded for a new trial because of the exclusion of evidence pertaining to data upon the hospital records. That evidence was admitted during the subsequent trial, and a jury again returned a verdict of no cause of action, from which this appeal is taken.

On April 4, 1953, Mrs. Joseph was operated on for removal of an ovarian cyst and received transfusions of two pints of blood, one during the operation, and the other after being returned to her room. There is evidence that during the second transfusion she manifested symptoms of undue distress; that she began to perspire; and also to shake as if chilling. Ten days later she died in the hospital of lower nephron nephrosis (inflammation of the kidney that prevents it from functioning) which appears to have resulted from an incompatible blood transfusion reaction.

The claim of negligence is that the hospital failed to exercise proper care in (a) typing and matching the blood; (b) administering the transfusion; and/or (c) failing to stop giving the transfusion after an unfavorable reaction was or should have been noticed.

The giving of blood transfusions has become a well recognized means of medical therapy and the techniques employed in connection with giving them is standardized. The hazard of an adverse reaction is also well known and res ipsa loquitur has been applied in some cases where it is shown that the evidence will sustain a finding that the wrong type of blood is actually given. However, there is presented a somewhat different fact situation here.

The evidence delineated the complete procedure followed by the hospital thus: the blood is taken from a donor of proper age, health and condition either by a registered nurse or under her direction by one skilled in the art. Sterile equipment is used and the blood is run directly into a pint bottle. Three small sample tubes, which are used in typing and matching the blood, are taken at the same time and are given the same number as the pint bottle.

While it is realized that res ipsa loquitur has been applied in various fields where an injury occurs which is not to be expected if proper standards of care and skill are observed, this is done only with caution, par-

ticularly in the medical field because of the realization that many aspects of the treatment of human ills cannot yet be regarded as exact science and a bad result may obtain even though recognized standards of care and skill are employed.

According to the evidence in this case there can be no certainty that there will be no adverse blood reaction even when the best methods known to medical science are used in the typing and matching of the blood. The expert witnesses testified that even when such procedures are followed, hemolytic reactions nevertheless occur in about one to five per thousand transfusions and that death may result in from twenty-five to thirty per cent of those suffering such reaction. (The defendant hospital gives about 6,000 transfusions per year.) Upon the basis of that evidence, even if it be assumed that Mrs. Joseph suffered a hemolytic reaction, it cannot be said that the trial court was in error in adopting the view that this is something that may have occurred without negligence.

Upon the basis of the considerations above discussed we are not disposed to disagree with the ruling that there was no proper foundation to submit the case to the jury on the question of res ipsa loquitur.

It is apparent, however, that there are known hazards involved in giving blood transfusions and this would, of course, impose upon those administering them the duty of exercising the utmost care and vigilance for the safety of the patient. This includes not only the preliminary steps in taking, typing and matching the blood, which were satisfactorily explained, but also the duty to make careful observation of the patient during the transfusion for any indications of an adverse reaction. It was upon this latter issue that the case was submitted to the jury as to the negligence of the defendant.

The jury were properly advised that they were the sole judges of the issues of fact and that they could draw all reasonable inferences naturally arising from the evidence. In the light of such instructions and upon the basis of the evidence they did not find the defendant negligent, and this is the second jury which has so held.

(Joseph v. W. H. Groves Latter-Day Saints Hospital, 10 CCH Neg. Cases 2d 819 — Utah.)

THE PARENTERALS PAGE NUMBER 3

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Book Reviews

On the Inhalation of the Vapour of Ether in Surgical Operations: Containing a Description of the Various Stages of Etherization, and a Statement of the Result of Nearly Eighty Operations in Which Ether has been Employed in St. George's and University College Hospitals. By John Snow, M.D., Univ. Lond., Fellow of the Royal Medical and Chirurgical Society, Lecturer on Forensic Medicine. London: John Churchill, Princes Street, Soho. 1847. Lea & Febiger, Philadelphia, Pennsylvania. 1959. $5.00.

Prepared under the auspices of the Wood Library-Museum of Anesthesiology, New York, New York, this reproduction makes available to anesthetists one of the great historical books in the specialty. The slender volume contains the first classification of stages of anesthesia, describes the apparatus used by the author, the quantities of ether vapor in air at different temperatures, and his observation following clinical experience with ether. Anesthetists who have not previously read this classic will be delighted and amazed at this work of the first physician anesthetist. The book may be obtained by writing to the Wood Library-Museum of Anesthesiology, 145 East 49th Street, New York 17, New York.

Doctor Squibb. The Life and Times of a Rugged Idealist. By Lawrence G. Blochman. Simon and Schuster. New York. Cloth. 371 pages, 1959. $5.00.

From the private journals and diaries written by Dr. Edward Robinson Squibb, the author has revived an era of American history that will be of particular interest to anesthetists. With the name of Squibb much in the public eye, it makes appropriate reading to follow the career of a man who more than one hundred years ago began the fight against quackery and fakers in the pharmaceutical industry. As a young doctor in the United States Navy during the Mexican War, he first became interested in the use of ether with which his name is best associated by anesthetists. In the 1870's Dr. Squibb began the fight that resulted in the establishment of the Pure Food and Drug Act. Written in a style that is most readable, this biography will give pertinent knowledge and pleasurable pastime.

Hypnosis in Anesthesiology. By Milton J. Marmer, M.D., M.Sc.Med. (Anes.); Chairman, Department of Anesthesia, Cedars of Lebanon Hospital, Los Angeles, California; Assistant Clinical Professor of Surgery (Anes.), University of California School of Medicine, Los Angeles, California; Diplomate, American Board of Anesthesiology; Member, Society for Clinical and Experimental Hypnosis. Charles C Thomas, Springfield, Illinois. Cloth. 150 pages. 1959. $6.75.

With the continued interest in hypnosis as adapted to anesthesiology, the author has prepared a text specifically designed for the anesthetist. Beginning with a brief historical review he proceeds to outline the psychology of hypnosis, the methods for inducing hypnosis and its clinical applications. Specific cases are presented to illustrate the advantage of the technic in surgery, obstetrics and in the therapy of pain. Precautions, post-hypnotic suggestion and hypnosemantics are the subjects of the concluding chapter. An extensive bibliography follows the text. The book is well indexed.

Insurance

The 1960 AANA Convention in San Francisco will be a big success. It can't help but be a success. The many months of careful planning by the National Headquarters, officers and various committees have guaranteed that success.

Your insurance consultants are going to do everything possible to contribute to that forthcoming success. We feel that the best way to offer our contribution is to give every AANA member present an opportunity for private consultation on the various AANA Group Insurance Programs.

A very special consideration is planned for all members attending the National Convention. You may recall that the July issue of the "News Bulletin" announced the official closing of the "Charter Enrollment" in the Group Retirement Program. This "Charter Enrollment" allows all active members in good standing the opportunity to enroll in the approved Retirement Program without the usual "red tape" of a medical examination or the answering of any embarrassing health questions.

As a special concession the same "Charter Member" liberal arrangements will be made available to all members attending the San Francisco Convention. We would suggest that you contact us for an appointment for a private interview at the time you register. Our convention booth is located next to the AANA Headquarters.

A new pamphlet, "The AANA Financial Security Program," will be distributed at the convention. This 32 page pamphlet will offer the member a description of the various insurance plans available — in plain language that can be understood. The small booklet is partly illustrated and fully indexed. It will describe in simple terms the various insurance plans and also instructions on "How to file a claim; Who is eligible?; Hospital Benefits?; Retirement dividends?" and many other valuable points of information. These books may be obtained at our table.

During the convention we are planning to complete our itinerary for attending the various Assembly and State Meetings. This itinerary will include meetings planned for 1960 and 1961. As we mentioned previously, we will make every attempt to accept all invitations; however, it would be greatly appreciated and also assist us, if we have the opportunity of confirming the acceptance of the invitation well in advance.

It will be a successful convention. We hope to do our share to contribute towards that success. See you in San Francisco.

John C. Mogenis

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Hospital Safety

Harriet L. Aberg, C.R.N.A.

Is it permissible to use plastic kick bucket liners while flammable anesthetics are being administered?

Some tests of the possible static accumulations and sparking have been conducted on the plastic liners for kick buckets. If the bucket has conductivity through it because of the presence of conductive casters or other bonding device, the static charges which do accumulate on the plastic can do no harm.

The sponges and debris in the kick bucket lined with plastic would be insulated from the floor, of course, but this in itself presents no appreciable hazard. The plastic liners are seldom, if ever, removed from the buckets during administration of an anesthetic. Their importance in helping control postoperative infection is greater than any probable spark hazard which we can foresee. So it seems quite safe to use them.

* * * * *

Is the use of copper brads, nails or rivets a satisfactory method of achieving conductivity?

Yes, *BUT* — "I have copper brads in my shoes which make me conductive, but I feel I am taking a chance of being electrocuted since these offer no resistance to short circuited equipment." This statement points up the hidden danger factor of the copper nail theory.

If the conductive flooring is maintained with a resistance of not less than 25,000 ohms, a wearer depending on such a non-ferrous device for conductivity probably will be fairly well protected from electrical shock and electrocution in case of a short circuit. Referring to this floor resistance reading, N.F.P.A. #56 says, "This minimum is specified as an additional protection against electrical shock." But it would be much safer to have shoes with an over-all conductive sole with a resistance up to 250,000 ohms.

The Code for Flammable Anesthetics states, "Conductive footwear and other personnel-to-floor connective devices shall be tested on the wearer each time they are worn." With both feet on the testing device the safe reading may show a resistance of up to 1,000,000 ohms (1 megohm).

Shoe brads, nails and rivets are not always comfortable to the wearer, and are not always kind to the flooring. And it is not unusual to find that the only time there is proper contact

(Continued on page 255)

Miss Aberg is A.A.N.A.'s representative on the N.F.P.A. Committee on Hospital Operating Rooms.

Any questions pertaining to hospital safety may be directed to the Executive Office. Answers will be included in this section in future issues.

Abstracts

Krause, S. O., Murray, P. M., Holmes, J. B. and Burch, R. E.: Heroin addiction among pregnant women and their newborn babies. Am. J. Obst. & Gynec. 75: 754-758 (April) 1958.

"The material for this paper consists of 18 women delivered at Sydenham Hospital during 1953, 1954, and the first 2 months of 1955, all of whom were acknowledged heroin addicts. During these 2 years we delivered 2,795 women; therefore, there is an incidence of 1:149 of heroin addiction at our hospital. Upon admission to the Obstetrical Service, very few of these mothers volunteer the information that they are addicted. . . . Most of our patients received an injection just prior to admission and hence had no withdrawal symptoms until 6 to 24 hours later. . . .

"All mothers were encouraged to extend their hospital stay until they felt they could do without the drug, but all were anxious to leave in 5 days. No other rehabilitation was attempted. . . . The clinical picture is much worse for the fetus than for the mother. Five of the 18 babies were premature by weight (less than 5½ pounds). . . . We would expect the babies born through premature labor to be premature by weight; but there were 7 mothers whose calculated date of confinement was at 39 or 40 weeks and only one of their 7 babies weighed over 6½ pounds. . . .

"All but 2 of these babies were in good condition at birth. . . . The appearance of 2 cases of developmental defects may be merely coincidental. . . . Fifteen of the 18 babies developed withdrawal symptoms within one to 56 hours after birth. They presented a fairly characteristic syndrome, varying from mild to very severe. An excess of mucus, often greenish or brownish, appears at or within the first few hours of birth. This mucus interfered seriously with respiration and required repeated aspiration and oxygen. Within 6 to 18 hours, and occasionally earlier, an abnormal tremor of the arms and legs is noted. This symptom in itself is important only because it heralds the advent of vomiting and the inability to nurse. Many of these babies when given the bottle seem to have difficulty swallowing. Respiratory crisis and cyanosis may occur at this time. Vomiting begins within 24 to 36 hours and may be mild and last only 2 to 3 days or may be so severe that no formula or water is retained for 5 to 6 days. One baby started vomiting on the tenth day.

"The babies that survive are usually asymptomatic within 6 to 7 days. Barbiturates, belladonna, paregoric, and special formulas seem to have no value in their management. Four of our babies died. They died on the sixth, seventh, eighth, and eighteenth days of life. The one that died on the eighteenth day did not start vomiting until the tenth day.

"One of these deaths may be attributed to anomalies incompatible with life, but the baby exhibited all

of the above symptoms. In the terminal stages these babies were apathetic and emaciated, and they all appeared to die of respiratory distress. . . . We were unable to correlate the degree of severity of the withdrawal symptoms in the baby with those of the mother. This may be due to the fact that we were unable definitely to rule out an outside supply of the drug to the mothers. . . .

"We prevailed upon the pediatric department to treat the babies as we did the mothers — that is, for withdrawal symptoms of heroin addiction —and they started using methadone in doses of 0.5 mg. every 4 to 12 hours. This regime is started within the first 24 hours and continued in decreasing doses. Five babies have been managed on this regime. All have survived and have appeared to have less severe symptoms for a shorter period of time."

Greene, H. G.: Intraperitoneal neomycin in the treatment of acute bacterial peritonitis. Surg., Gynec. & Obst. 107: 169-172, August 1958.

"Recent reports by Pridgen and Engel and Denson of respiratory arrest following the intraperitoneal administration of neomycin have focused attention on the advisability of using this technique. The experiences with a safe method of administering neomycin intraperitoneally are presented here to advance this method as an effective form of therapy. . . .

"Twenty patients with severe, acute bacterial peritonitis were treated with divided doses of neomycin, administered intraperitoneally, in addition to parenteral therapy with other antibiotics. No deleterious effects of this form of therapy were noted. The mortality from infection was 7 per cent. . . .

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"Recent reports associate intraperitoneally administered neomycin with respiratory arrest have in common the employment of massive doses of the drug. In view of the innocuousness of this form of therapy and of the low mortality rate from infection, neomycin administered intraperitoneally in moderate-sized, divided doses is recommended as an adjunct to surgery for patients with severe acute bacterial peritonitis."

Webb, Paul: Closed breathing-ventilating systems using recirculated oxygen. J. Aviation Med. 30: 273-279, April 1959.

"Closed breathing systems have been in use for over a century in basal metabolism machines and, for some time, in anesthetic machines and in submarine atmospheric regenerating systems. The principle of recirculating air used to ventilate an occupied space is a much used technique in air conditioning, although it has not apparently been used in ventilated clothing. These approaches appear promising for prolonged flight beyond the atmosphere. . . .

"A new type of vehicle and a new type of flight are imminent, bringing with them new conditions to work in. The differences in the new conditions are that (1) there is no atmospheric air available for ventilating; (2) flight durations may become extremely long, perhaps lasting for days or weeks; (3) a terrific penalty is incurred from added weight in the aircraft, even for such a small quantity as extra oxygen needed for an open system; (4) the vehicle's cabin will be sealed up and pressurized to a relatively low altitude; and (5) it becomes mandatory to ventilate a man directly in his clothing because of the possibility of transient high heat loads and prolonged low level heat exposure, and the requirement for wearing pressure suits made of impermeable cloth.

"Under such conditions it becomes important to reuse gases which are normally exhausted overboard. . . . The first major step was to combine into one stream the gas needed for both breathing and for ventilation. . . . The feasibility of such a combined approach was shown in a primitive prototype made at the Aero Medical Laboratory in October, 1955. . . . A useful and compact arrangement has been arrived at for the elements chosen. This prototype is being made. . . . Major emphasis for future development will be placed on the problem of making recirculating systems for longer flight durations."

Nominations for Office American Association of Nurse Anesthetists 1960-1961

PRESIDENT-ELECT

Jessie L. Compton (Methodist Hospital, Dallas, Texas): Graduate of Parkland Hospital School of Nursing, Dallas; graduate of the Baylor University Hospital School of Anesthesia, Dallas; member of A.A.N.A. in good standing since 1940; Chief Nurse Anesthetist, Methodist Hospital, Dallas, 1939-59; member and chairman of many A.A.N.A. Committees, 1944-58; member, Board of Trustees, A.A.N.A., 1951-53. 2nd vice-president, A.A.N.A., 1958-59; 1st vice-president, 1960.

VICE PRESIDENT

Martha Belew (Baptist Memorial Hospital, Memphis, Tenn.): Graduate of Baptist Memorial Hospital School of Nursing; graduate of Barnes Hospital School of Anesthesia, St. Louis; member of A.A.N.A. in good standing since 1944; treasurer, Tennessee Association of Nurse Anesthetists, 1948; president, Tennessee Association, 1956-58; member, District Board, Tennessee Association of Nurses, 1955-57; member, A.A.N.A. Bylaws Committee, 1958; member, A.A.N.A. Board of Trustees, 1958-60.

Elizabeth M. Boyer (Veterans Administration Hospital, Cleveland, Ohio): Graduate of Youngstown Hospital School of Nursing, Youngstown, Ohio; graduate of Jackson Park Hospital School of Anesthesia, Chicago, Illinois; member of A.A.N.A. in good standing since 1934; former President and Secretary-Treasurer, Ohio Association of Nurse Anesthetists; has served on Program and Nominating Committees, A.A.N.A.; member, A.A.N.A. Board of Trustees, 1957-59.

TREASURER

Marie W. McLaughlin (Ingalls Memorial Hospital, Harvey, Ill.): Graduate of St. Luke's Hospital Nurse's Training School, St. Paul, Minn.; graduate of St. Luke's Hospital School of Anesthesia, St. Paul; member of the A.A.N.A. in good standing since 1933; secretary-treasurer, Tri-State Nurse Anesthetists Assembly, 1953-54; chairman of Convention Committee, A.A.N.A., 1953-54; member of Bylaws Committee, A.A.N.A., 1954-55; Treasurer, A.A.N.A., 1955-60.

John L. Smith (Greenville, South Carolina): Graduate of Orange County Hospital School of Nursing, California; graduate of McLeod Infirmary School of Anesthesia, Florence, S. C.; member of A.A.N.A. in good standing since 1956; member of several committees of the Carolinas-Virginias Assembly; Treasurer of South Carolina Association, 1958-60.

TRUSTEES REGION 1

Irma M. Brose (Pittsburgh, Pennsylvania): Graduate of Passavant Hospital School of Nursing, Pittsburgh; graduate of Mercy Hospital School of Anesthesia, Pittsburgh; member of A.A.N.A. in good standing since 1940; Trustee of Pennsylvania Association in 1944-46 and 1953-55; President, Pennsylvania Association, 1956-58; she has served as chairman of several committees for the Middle Atlantic Assembly and of A.A.N.A.

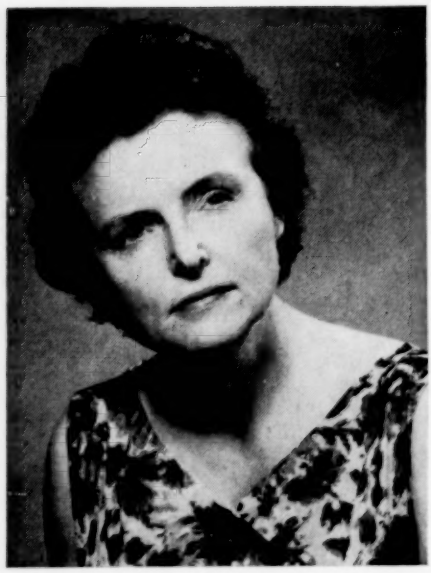
Catherine McGarry (Brookline, Massachusetts): Graduate of Massachusetts General Hospital School of Nursing, Boston, Mass.; graduate of Johns Hopkins Hospital School of Anesthesia, Baltimore; member of A.A.N.A. in good standing since 1947; formerly secretary-treasurer, vice-president and president of Massachusetts A.A.N.A.; vice-chairman, New England Assembly, 1959; member of A.A.N.A. Convention Committee, 1959.

TRUSTEES REGION 2

Nell M. Livengood (Atlanta, Georgia): Graduate of North Carolina Baptist Hospital School of Nursing, Winston-Salem; graduate of Charity Hospital School of Anesthesia, New Orleans; member of A.A.N.A. in good standing since 1947; has served as trustee, vice-president and president of the Georgia Association; secretary-treasurer of Southeastern Assembly; member of several state, regional and national committees.

Mary Frances Smith (New Orleans, Louisiana): Graduate of Hotel Dieu School of Nursing, New Orleans; graduate of Long Island College Hospital School of Anesthesia, New York; member of A.A.N.A. in good standing since 1939; Chairman, Publicity Committee and President of the Louisiana Association; chairman, Revisions Committee and chairman of Southeastern Assembly; chairman, A.A.N.A. Planning Committee, 1958-60.

TRUSTEES REGION 3



Mabel E. Courtney (Detroit, Michigan): Graduate of the Grace Hospital School of Nursing and the Grace Hospital School of Anesthesia, Detroit; member of A.A.N.A. in good standing since 1936; member of many committees and past president of Michigan A.N.A.; many committees of A.A.N.A.; Board of Trustees of A.A.N.A.; and second vice president and first vice president of A.A.N.A.; active in Grace Hospital Alumni and director of school of anesthesia, Grace Hospital.

Annelle Gobers (Springfield, Illinois): Graduate of St. Francis Hospital School of Nursing, Hartford, Conn.; graduate of Barnes Hospital School of Anesthesia, St. Louis; member of A.A.N.A. in good standing since 1950; program chairman, Illinois A.N.A., 1957 and 1959; represented Illinois Association, Anesthesia Section, Illinois Maternal and Infant Welfare, 1957-60; member A.A.N.A. Exhibits Committee, 1958; vice-chairman, Tri-State Assembly, 1959.

Clare L. Newill (Milwaukee, Wisconsin): Graduate of West Penn Hospital, Pittsburgh; graduate of Mercy Hospital School of Anesthesia, Pittsburgh; member of A.A.N.A. in good standing since 1943; secretary of Wisconsin A.N.A. 1955-57; president-elect, Wisconsin Association of Nurse Anesthetists, 1957.

Classified Advertisements

NURSE ANESTHETIST—$500. New and Modern Surgery: unusually strong and well diversified Surgical Staff. Good opportunity in new 260-bed expanding hospital; college town location; good personnel policies; 40-hour week; 7 holidays, hospitalization. Social Security. Apply: F. J. O'Brien, Administrator, Chambersburg Hospital, Chambersburg, Pa.

WANTED: Nurse Anesthetist for 150 bed hospital. Starting salary $6300 plus complete maintenance. 2 Nurse Anesthetists in department. College Town. Excellent Personnel Policies. Apply: J. W. Kenney, Administrator, Mary Lanning Memorial Hospital, Hastings, Nebraska.

REGISTERED NURSE ANESTHETIST: For 61 bed General Hospital. Staff of two Nurse Anesthetists maintained to compensate for call hours and weekends. Liberal Personnel Policies. Full maintenance provided in adjoining residence. Apply stating salary expected to: Margaret Vopni, R.N., Administratrix, Grafton Deaconess Hospital, Grafton, N. D.

ANESTHETIST — 330 bed voluntary General Hospital — not tax supported. Modern air-conditioned Surgical Suite. Excellent working conditions. Room and board available if desired. Staff consists of 6 Nurse Anesthetists under supervision of three Anesthesiologists. Salary open. Apply Decatur and Macon County Hospital, Decatur, Ill.

REGISTERED NURSE ANESTHETISTS: 690 bed hospital, primarily Surgical, active Operating Suite. Integral part of developing 236 acre Detroit Medical Center. Salary commensurate with qualifications. Liberal Personnel Policies. Write or call Personnel Director, Harper Hospital, Detroit 1, Mich.

NURSE ANESTHETIST — Night Surgery call only. 5 nights per week—no OB — liberal vacation — 2 pension plans and Social Security — Hospitalization free. Location Northeast Florida. Apply Box B-46, Journal American Association of Nurse Anesthetists, Prudential Plaza, Suite 3010, Chicago 1, Ill.

ANESTHETISTS: Charleroi-Monessen Hospital (General, 199 beds and 36 bassinets), North Charleroi, Pa. (HU 3-5561). Salary $475-$550 with increments, sick leave, holidays, four calendar weeks paid vacation annually, Social Security, etc. Call or write Administrator.

NURSE ANESTHETIST, Male or Female, needed immediately for 30 bed hospital. The hospital is new, accredited by the J.C.A.H. and licensed by the state. Salary open, plus additional compensation for call. The area offers golf, water sports, hunting, skiing and many social activities. Fine schools, both public and parochial. Apply Eugene W. Pray, Administrator, Columbia Basin Hospital, Ephrata, Wash.

NURSE ANESTHETISTS (4) — To increase present staff. Accredited 500 bed hospital in University town. Excellent salary; liberal Personnel Policies. Write Administrator, St. Joseph Mercy Hospital, Ann Arbor, Michigan.

ANESTHETIST: 100 bed General Hospital needs second Anesthetist. Alternate call. Six paid holidays, paid vacation, hospitalization insurance, and many other benefits. Beginning salary $500 plus full maintenance. Opportunity for advancement. Hospital is located in community of 20,000 people and is 85 miles South of Memphis. Contact Administrator, Helena Hospital, Helena, Ark.

NURSE ANESTHETIST—61 bed hospital with new addition in progress. Located in the Shenandoah Valley and Blue Ridge Mountains near Richmond, Virginia and Washington, D. C. Inexperienced salary $450 per month with raise in 16 mos. and yearly thereafter. Experienced $475 per month and raise. Shoes and uniforms furnished. Excellent staff. Contact: Administrator — Waynesboro Community Hospital, Waynesboro, Va.

NURSE ANESTHETIST — 500 bed hospital. Anesthesia Department consists of three M.D. and thirteen Nurse Anesthetists. Write to Medical Director, Crawford W. Long Hospital, Atlanta, Georgia.

NURSE ANESTHETIST — 225 bed General Hospital, suburban Detroit area. Salary $480.00 per month, with increases to $524.00. Blue Cross - Blue Shield, Social Security, retirement plan, group insurance available. Reasonable living accommodations available. Apply:
Administrator
Wyandotte General Hospital
Wyandotte, Michigan

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2 NURSE ANESTHETISTS. 275 bed hospital. Start $500.00 per month and maintenance. Emergency call every 5th day. Department directed by Anesthesiologists. Apply St. Frances Hospital, Monroe, La.

OPENING available Oct. 1960 (for Nurse Anesthetist) for 30 bed hospital in small Northeastern Oregon community. Low surgical volume and no OB allows time for personal activities or other hospital duties with additional pay. This is an ideal situation for a married woman or an older person wanting to slow down or avoid heavy work schedules. 3 weeks vacation. Salary open. Apply Administrator, WALLOWA MEMORIAL HOSPITAL, Enterprise, Oregon.

NURSE ANESTHETIST: for part time. Very few night calls, small OB Service; all types of inhalation anesthesia. 50 bed hospital, Valley of Virginia. Apartment available. Attractive for semi-retired CRNA. Apply Berdena M. Morey, C.R.N.A., Shenandoah County Memorial Hospital, Woodstock, Virginia.

NURSE ANESTHETIST — 70 bed general accredited hospital in Montana College Town. Average 20 hour work week. No OB. Call time shared with another Anesthetist. Starting salary $500 per month plus complete maintenance. Liberal Personnel Policies and vacation. Apply Don Showman, Administrator, P. O. Box 1391, Havre, Montana.

NURSE ANESTHETIST to complete staff of five for 268 adult bed hospital, expanding to 500 soon, located near business district, Akron, Ohio. Surgery and OB. No call except relief. Forty hour week, extra for overtime. Four weeks vacation after year. Qualifications and experience govern salary offer. Apply: Administrator, St. Thomas Hospital, 444 N. Main St., Akron 10, Ohio.

NURSE ANESTHETIST: 364 bed General Hospital being enlarged to 500 beds. Want to enlarge present staff of one M.D. plus 7 Anesthetists. Salary from $400 to $500 per month, plus extra bonus payment per case on call duty and retirement and sickness benefits. New air conditioned Operating Rooms. Apply Chief, Department of Anesthesia, York Hospital, York, Pa.

REGISTERED NURSE ANESTHETIST — Female, fully accredited modern 150 bed hospital, department directed by Chief of Surgery. Starting salary $500 plus 2 weeks vacation, health insurance, sick leave, Social Security and group life insurance, paid educational leave. Apply to Homer E. Allen, Administrator, Clinch Valley Clinic Hospital, Richlands, Va.

WANTED: Nurse Anesthetist—25 bed fully approved General Hospital, excellent working conditions, salary open —Contact: Administrator of A. C. H. Hospital, Shawnee, Okla.

NURSE ANESTHETIST (Female) for 130 bed hospital 30 mins. from ocean beaches, 2 hours from 3 metropolitan areas. Call one night a week and every third weekend with usually light load of emergency work. Anesthesiologist in charge. Starting salary $450 per month with room and board furnished. Contact: W. P. Portz, M.D., Milford Memorial Hospital, Milford, Del.

NURSE ANESTHETIST, Male or Female, for hospital on Staten Island, N. Y., excellent conditions. Write: Box B-44, Journal American Association of Nurse Anesthetists, Prudential Plaza, Suite 3010, Chicago 1, Ill.

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75 BED GENERAL HOSPITAL, College Town, small Western State, needs third C.R.N.A. No Obstetrics. Double schedule 5 days. Off every third day. Salary open. Must be capable intubating and managing all types of General Anesthesia without supervision. Apply: Box B-51, Journal American Association of Nurse Anesthetists, Prudential Plaza, Suite 3010, Chicago 1, Illinois.

NURSE ANESTHETIST for 604 bed General Hospital, no Pediatric Department, 40 hour week, plus overtime, salary open, generous employee benefits. Apply Personnel Office, Akron City Hospital, 525 E. Market St., Akron 9, Ohio.

OPENING for Registered Nurse Anesthetist. University City, population 100,000. New 175 bed hospital, 2 M.D. Anesthesiologists and 4 R.N.A.'s now in department. Day off after call. Sick leave, 2 weeks vacation to start. Retirement plan and other benefits. Congenial working conditions. Begin $500.00 per month. Contact Dr. Francis or Dr. McGowan, Central Baptist Hospital, Lexington, Ky.

WANTED: NURSE ANESTHETIST to join staff of four Physicians and three Nurse Anesthetists in lower Connecticut. Prevailing Connecticut salary — liberal vacation and sick leave. Reply Box B-50, Journal American Association of Nurse Anesthetists, Prudential Plaza, Suite 3010, Chicago 1, Ill.

NURSE ANESTHETISTS — Immediate openings for qualified Registered Nurses in 450 bed short term General Hospital with active Surgical Program. Opportunity to associate with three board certified Anesthesiologists. Salary commensurate with experience and training. Extra work available if interested. Write furnishing outline of experience to Director of Anesthesia, Delaware Hospital, 501 W. 14th St., Wilmington 99, Del.

NURSE ANESTHETIST for active Obstetrical Department, university affiliated, 250 bed teaching hospital. 200-225 deliveries per month. Rotation of day and night work, weekends and holidays. Coverage shared by three Anesthetists. Liberal benefits including sickness and accident insurance, retirement program. Inquire: Highland Hospital, Rochester, N. Y.

NURSE ANESTHETIST for fully accredited, 140 bed hospital in Southwest Virginia. Air-conditioned Operating Rooms. Standard Personnel Policies and Social Security benefits. Salary $450.00, adjusted to experience, and maintenance allowance. C. B. Hale, Administrator, Johnston Memorial Hospital, Abingdon, Va.

NURSE ANESTHETIST — Salary $4,680-$5,880 annually. Extra pay when on call. 40 hours weekly. Four weeks vacation. One easy night call every two weeks. One easy weekend on call every two months. Modern air-conditioned Operating Rooms. Please state training and experience when applying. Member or eligible for AANA. Apply Dr. John C. Snow, Massachusetts Eye & Ear Infirmary, Boston, Mass.

ORAL SURGERY CLINIC has position open to Nurse Anesthetist. Pleasant, well-equipped facilities with Registered Nurse staff. Five day week, Monday through Friday; hours 8:00 to 3:30. No holiday or call duty. Annual vacation and bonus benefits. Would consider morning only if desired. Salary open. Meramec Oral Surgery Group, 117 N. Meramec Ave., Clayton 5, Missouri.

NURSE ANESTHETIST to complete staff of three for 100 bed General Hospital, fully accredited, newly remodeled, located 25 miles from Pittsburgh, Pa. Excellent working conditions and salary. For further information write to Miss Ann C. Caldwell, Administrator, Memorial Hospital, Monongahela, Pa.

WANTED: NURSE ANESTHETISTS for Obstetrical Service. Starting salary $500. Write: Box B-54, Journal American Association of Nurse Anesthetists, Prudential Plaza, Suite 3010, Chicago 1, Ill.

POSITION OPEN for AANA member to complete present staff of 3 Anesthetists and 1 Anesthesiologist. Accredited 160 bed hospital. General and Obstetrical - Anesthesia coverage. For further information write M. L. Wieland, CRNA, Midland Hospital, 4005 Orchard Dr., Midland, Mich.

NURSE ANESTHETIST: Starting salary — $4,850 with yearly increments. 40 hour week. Liberal pension, vacation, Social Security. QUEENS HOSPITAL CENTER, 82-68 - 164th St., Jamaica 32, N. Y.

NURSE ANESTHETISTS — 300 bed hospital, air-conditioned Operating Rooms. Shift differential bonus, liberal sick time and vacation policy. 40 hour week including call hours. Supervised by 3 M.D. Anesthesiologists. Apply Personnel, New Britain General Hospital, New Britain, Conn.

WANTED: Registered Nurse Anesthetist for completely new 150 bed air conditioned hospital. Vacation, sick leave, social security. 1 hour drive from Atlantic Ocean beaches and Norfolk, Va. Pleasant working conditions — write or call Mrs. Mattie A. Foster, C.R.N.A., Albemarle Hospital, Inc., Elizabeth City, North Carolina.

NURSE ANESTHETIST — for anesthesia department comprised of 4 M.D.'s and 5 R.N.A.'s. Attractive and inexpensive living accommodations available. Salary $400.00 per month plus overtime while on call. Apply Mr. L. R. Currier, Assistant Director, Elizabeth General Hospital & Dispensary, 925 E. Jersey St., Elizabeth, New Jersey.

IMMEDIATE OPENING — for registered nurse anesthetist to join a staff of 3 other R.N.A.'s in a 100-bed, fully-approved, 6-year-old, general hospital. New equipment furnished. Gross salary exceeds $8,000 annually, 3 weeks paid vacation, Blue Cross, Social Security and other fringe benefits. Contact administrator, Hardin Memorial Hospital, Elizabethtown, Kentucky.

NURSE ANESTHETIST — 600 bed general hospital, 25 miles from New York City. All Anesthesia Techniques. 40 hour week includes call. 10 Holidays. 30 days vacation. Salary open. Apply Irving Weinberg, M.D., Director of Anesthesiology, Meadowbrook Hospital, Hempstead, L. I., N. Y.

THE UNIVERSITY HOSPITALS OF CLEVELAND SCHOOL OF ANESTHESIA ALUMNAE ASSOCIATION will not have their meeting during the A.A.N.A. Convention due to the small number planning to attend.

IMMEDIATE OPENING — for Nurse Anesthetist, 230-bed hospital, liberal personnel policies, paid vacation and sick leave, starting salary — $550 mo. Reply: Box M-77, Journal American Association of Nurse Anesthetists, Prudential Plaza, Suite 3010, Chicago 1, Illinois.

WANTED IMMEDIATELY — Two Nurse Anesthetists for expanding general hospital in Haverhill, Massachusetts. New graduates $115 per week to start including meals and laundry. Others according to experience. New O.R. and Maternity. Good working conditions. Apply to Harold S. Wright, Jr., M.D., Chief of Anesthesia, Hale Hospital, Haverhill, Massachusetts.

NURSE ANESTHETISTS: (2) for 100 bed modern general hospital. Located 50 miles from Birmingham. Starting salary $600.00 plus meals and laundry. 14 days sick leave, 14 days vacation and 7 holidays. Write: Bert V. Culwell, Administrator, Cullman Hospital, Cullman, Alabama.

NURSE ANESTHETIST — 250 bed general suburban hospital, 25 miles from Boston, excellent working conditions. Reply Box No. M-78, Journal American Association of Nurse Anesthetists, Prudential Plaza, Suite 3010, Chicago 1, Ill.

The **THIRTY-SECOND QUALIFYING EXAMINATION** for membership in the American Association of Nurse Anesthetists will be conducted on November 12, 1960. The deadline for accepting completed applications, including the transcripts, is October 1. Notice of eligibility will be mailed about October 10.

Applications should be forwarded early enough to allow time to request transcripts and have them returned to the Executive Office before the deadline date.

SAFETY

(Continued from page 241)

with such devices is the occasional time when the wearer has both feet planted flat on the floor. We have not heard of any simple, easy, inexpensive way to achieve a safe conductive path from personnel to conductive floors.

Some hospitals are adopting the practice of having all personnel wear conductive soled shoe covers. These are frequently washable. This provides the proper conductivity and also provides greater cleanliness in operating and delivery rooms by completely covering footwear. When wearing such easily discernible safeguards, both the wearer as well as the enforcement person are much more aware and alert to possible hazards.

KNOX

(Continued from page 210)

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San Francisco Conventioneers!

To save yourself waiting time in the ticket line in the AANA booth in San Francisco, order your banquet tickets now. This advance sale of tickets will be discontinued on August 15. Money received after that date will be refunded by mail.

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Check enclosed $_____

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The Journal OF THE American Association of Nurse Anesthetists

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Articles for publication in the Journal of the American Association of Nurse Anesthetists are accepted with the understanding that they have not been published or accepted for publication in other journals.

Illustrations should be glossy prints. Each illustration should carry a number and the author's name. Legends for illustrations should be typed on a separate page at the end of the manuscript. Tables should be prepared each on a separate sheet with the number and legend on the same sheet. Tables should not exceed one page under ordinary circumstances. The type size of the Journal page is 4 1/2 x 6 7/8 inches. Illustrations should be adaptable to this size or one column width, 2 1/8 inches.

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Berger, Olive L.: The Use of Respirators in the Immediate Postoperative Period. J. Am. A. Nurse Anesthetists. *27*:182, Aug. 1959.

Adriani, John: The Chemistry of Anesthesia. Springfield, Ill. Charles C Thomas, 1952.

Proofs will be sent to the author prior to publication.

Manuscripts should be submitted to the Editor of the Journal of the American Association of Nurse Anesthetists, Suite 3010, 130 E. Randolph St., Chicago 1, Illinois.